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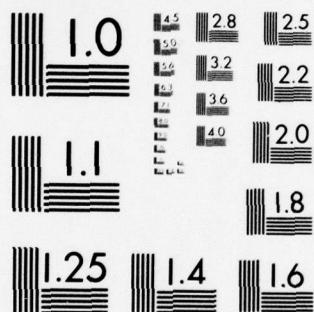
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Final report, 7 August 1978

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by

Kenneth C. Keating

B.A. University of Maryland - 1973

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INTRODUCTION

In recent months, the Soviet civil defense program has come under increased scrutiny by the western press and by western scholars. The implications of a viable Soviet civil defense program upon the strategic balance between the United States and the Soviet Union and its affect upon nuclear deterrence have been the prime motivational factors for this increased concern. It must be pointed out, however, that civil defense in the Soviet Union is not a new phenomenon and is a subject which the Soviets have taken seriously for quite some time. In fact, Soviet civil defense organizations celebrated their 43d anniversary in 1975.¹

With the advent of military aviation, belligerents acquired the capability to attack targets deep in the enemy's rear areas. As a result of this development, it became necessary to organize protection and defense of the civilian population and the national economy against enemy attack. Initially the Soviet armed forces were assigned this task, but the experience of World War I showed that a combination of active measures by the armed forces and the civilian population yielded the best results.²

On 4 October 1932, the Council of People's Commissars ratified the "Statute on Air Defense of the Union of Soviet Socialist Republics."³ This document assigned Local Air Defense units the missions of securing uninterrupted activities in the rear areas and of protecting the civilian population. Local Air Defense (Mestnaya Protivovozdushnaya Oborona or

MPVO) was designated a service and constituted a component part of the national air defense system.⁴

Local Air Defense activities included camouflage and blackout measures, construction of air defense facilities, fire fighting, maintenance of public order, communications, early warning, and emergency repair and rescue work.⁵ These activities were limited to those areas within range of attacking enemy aircraft. In other areas, air defense measures were limited to training the civilian population in individual protective measures against air attack and chemical warfare.⁶ During the years prior to World War II, Local Air Defense concerned itself primarily with training the population and planning the effective implementation of local air defense measures.⁷

On 20 July 1937, the Council of People's Commissars issued a decree entitled "On Local (civilian) Air Defense of Moscow, Leningrad, Baku, and Kiev," for the first time assigning responsibility for direct supervision of Local Air Defense to city soviets, the chairmen of which became Local Air Defense chiefs. "Special local air defense headquarters were established in these cities, and the position of city soviet executive committee deputy chairman for local air defense was established. Regular Red Army command personnel were assigned to this position."⁸

With the outbreak of World War II, the need for heightened preparedness of Local Air Defense units became apparent. The People's Commissariat of Internal Affairs (NKVD), which had supervisory responsibility over Local Air Defense, established directorates in the localities for day-to-day supervision of Local Air Defense activities.⁹

On 2 July 1941, the USSR Council of People's Commissars issued a decree concerning "Compulsory Air Defense Training for the Population,"

according to which all adults between the ages of 16 and 60 were required to undergo both anti-aircraft and anti-chemical training.¹⁰ In addition, females between the ages of 18 and 50, and males between the ages of 16 and 60 were required to serve in self-defense teams and to take an active part in local air defense activities.¹¹

This training was conducted by the Society for Assistance to the Defense, Aviation, and Chemical Construction of the USSR (or Osoaviakhim--the predecessor to the current Volunteer Society for Assistance to the Army, Air Force, and Navy or DOSAAF), the Red Cross and Red Crescent Societies, the local police, fire fighters, and the like.¹² Total manpower of Local Air Defense units in 1942 exceeded 6 million persons.¹³ The need for Local Air Defense units and their successes during the war is emphasized by the following post-war statistics. Soviet cities and rear installations were subjected to attack by more than 30,000 enemy aircraft which dropped approximately 1,600,000 high explosive and incendiary bombs.¹⁴ "However, the industrial, power engineering, transport, and communications installations continued to function and production idle time was relatively low."¹⁵ The Local Air Defenses extinguished 90,000 fires, prevented 32,000 serious breakdowns at industrial plants and other facilities, restored more than 200 railroad bridges, and disarmed more than 430,000 aircraft bombs and almost 2.5 million artillery and mortar shells.¹⁶ In addition, Local Air Defense personnel restored 180 kilometers of water supply lines and more than 15,000 dwellings, public buildings, and other installations.¹⁷

The ability of Local Air Defense to mitigate the effects of enemy air attack was clearly demonstrated during World War II, as the above statistics suggest. As a result, in 1949, the missions and organizational

structure of Local Air Defense were refined. Training programs were continued to maintain the readiness of the entire population in the event of the outbreak of another war.

Largely as a result of Stalin's refusal to recognize the impact of nuclear weapons, Soviet military doctrine and Soviet civil defense reflected little change as a result of their introduction.¹⁸ Shortly after Stalin's death, however, changes began to be instituted which indicated a Soviet awareness of nuclear weapons and their effects. In 1954, the first mention of atomic weapons appeared in Soviet civil defense manuals.¹⁹ Another of these changes was the 1956 improvement in the organization of the Local Air Defense and a further refinement of its missions. For the first time, Local Air Defense was designated "a system of nationwide measures carried out for the purpose of protecting the civilian population against modern weapons, to create conditions ensuring reliable operation of industrial facilities and other economic activities under conditions of air attack, the conduct of rescue operations and assistance to stricken victims, as well as the performance of emergency repair activities."²⁰ As a result, Local Air Defense units were established in all republics, krais, oblasts, cities, rayons, and facilities, i.e., it was organized nationwide. The USSR Minister of Internal Affairs continued serving as USSR Local Air Defense Chief.²¹

Following the creation of the Strategic Rocket Forces and other changes in the Soviet armed forces, a further reorganization of the Local Air Defenses was made. In July 1961, it was renamed USSR Civil Defense and the position of USSR Civil Defense Chief was established.²² The World War II military leader, Marshal of the Soviet Union V. I. Chuikov, combined this position with his post as Commander-in-Chief of the Ground

Forces until 1964 when that service was temporarily abolished by Khrushchev.²³ USSR Civil Defense Headquarters, a number of directorates and independent divisions were established.²⁴ By joint decree of the Central Committee of the Communist Party of the Soviet Union (CPSU) and the USSR Council of Ministers, responsibility for civil defense was transferred to the Ministry of Defense.²⁵ The civil defense organization was refined into its present day structure which covers the entire territory of the USSR. A territorial-production principle of civil defense organization was adopted. Territorially, it was now based, from top to bottom, on the existing structure of the Soviet government. In the area of production, it was based on the ministries, government agencies, enterprises, schools, and state and collective farms.²⁶

The need for strengthening civil defense has continued to be emphasized by the Soviet leadership. The reports of the 23d, 24th, and 25th Congresses of the CPSU have called for increased civil defense readiness and training.²⁷ On March 19, 1971, the Council of Ministers issued a decree giving local governments, assisted by appropriate staffs, increased responsibility for civil defense.²⁸ At the same time, the responsibility of DOSAAF for civil defense training was reduced as DOSAAF was now required to conduct the pre-draft military training called for by the 1967 Law of Universal Military Service. The following year, Colonel General Aleksandr T. Altunin was appointed USSR Civil Defense Chief and simultaneously elevated to the post of Deputy Minister of Defense. Soviet Civil Defense now ranked equally with the other services of the Soviet armed forces, whose chiefs also hold the rank of Deputy Minister.²⁹ At the 25th Party Congress in 1976, Altunin became a full member of the Central Committee giving him the prestige and elite party status enjoyed

by the commanders of the other branches of the armed forces.³⁰

The added emphasis given to Soviet civil defense by the appointment and elevation of Colonel General Altunin, by increased budgetary allocations, and by the increased emphasis on training the population, indicates that the Soviet leadership desires to maximize the potential that the strategic weapon of civil defense possesses. It is obvious that the Soviet Union has invested a great deal of time, effort, and resources into producing a viable civil defense organization. The need for such an organization stems from both an ideological justification and from a realistic appraisal of the international arena.

Communist ideology has consistently stressed the conflict between capitalist and communist societies. "The strategic doctrine and military posture of the USSR derives from the fundamental and unchanging Soviet premise that the struggle for dominance between the communist and capitalist systems, and the states belonging to them, is unavoidable, irreconcilable, and unrelenting, and that this struggle will, and indeed must, continue regardless of any agreements between states belonging to the opposing sides."³¹ In the Soviet view, war was considered inevitable for almost four decades. This view remained unchanged until the death of Stalin in March 1953. Then, at the Twentieth Congress of the Communist Party in February 1956, Khrushchev proclaimed that war was no longer "fatalistically inevitable."³² At the same time, Khrushchev made clear that the possibility of war continued to exist when he stated that no one can say categorically that there will be no war. Thus, while war was no longer considered inevitable, conflict (though not necessarily armed conflict) and competition between the capitalist and communist systems would continue to exist. The possibility of armed conflict arising from

this conflict and competition leads to the requirement for a strong defense system in order to be prepared for such an eventuality.³³

In the Soviet view, history reveals attempts by the "imperialists" to "destroy" the Soviet Union and restore a capitalist system. The Soviets believe that "the danger of aggressive wars will remain as long as imperialism has not given up its aggressive purposes or resigned itself to the existence of socialist states."³⁴ Soviet literature proclaims the peaceful intent of Soviet foreign policy and points to the imperialists as the aggressors. Despite agreements between the capitalist and communist states, such as the Nuclear Test Ban Treaty, the agreements of the first Strategic Arms Limitation Talks (SALT), and the Vladivostok agreement, the "danger of a new and more destructive war breaking out, still remains."³⁵

A recent Soviet work emphasizes the threat perceived by the Soviet leadership in the following manner:

Modern militarism takes advantage of all possibilities for the arms race. American imperialism is especially successful in this regard. It has developed a military industry which is unprecedented in history, which absorbs colossal amounts of money: direct military expenditures in the USA during the postwar period exceeded by 2 times similar expenditures made for these purposes during the entire history of the country up to 1945. During the last 5 years, the United States of America has spent about 400 billion dollars for military purposes. The military enterprises of the USA employ 21 percent of the workers and other personnel; 100,000 firms associated with the Pentagon work either directly or indirectly on the war effort.

Modern militarism maintains enormous armed forces for waging aggressive wars and suppressing national liberation movements of the peoples of the world. The allied armed forces of the Western Atlantic Block include more than 1 million people. Just in the territories of the European NATO countries there are 300,000 American soldiers and officers who comprise the backbone of the shock forces of this aggressive block. The USA delivers weapons to 63 countries. They have 429 large and 3,400 small military bases and support points located in 30 countries. The imperialist countries have accumulated enormous supplies of thermonuclear, nuclear, chemical, and ordinary weapons. Since World War II, the imperialist policy of aggression has caused more than 30 wars and armed conflicts, including ones like the USA war in Viet Nam, Cambodia, and Laos; the military adventures of Israel in the Near East, and so forth.³⁶

To be prepared for a future war, the Soviet Union maintains large armed forces and continuously presents the spectre of a future war to the population in urging constant preparedness. For example, in the introduction to a Soviet civil defense textbook published in 1970, the authors make the following statement: "On the basis of a profound Marxist analysis of contemporary international conditions, the Communist Party of the Soviet Union has concluded that the danger of attack by imperialists on the USSR and other socialist countries is currently increasing, and the countries of the socialist bloc must play a basic role in defending the peace."³⁷ How the socialist bloc, and the Soviet Union in particular, intends to "defend the peace" is, to a large degree, determined by their perceptions of the nature and characteristics of a future war.

One of the first questions that comes to mind when talking about a future war is: How will it begin? Soviet literature deals with three possible types of war: general world war, imperialist wars (limited wars), and wars of national liberation.³⁸ General world war, by far the most important because of its consequences, has received the main focus of attention in Soviet military literature.³⁹ While there appears to be some disagreement among Soviet writers as to how a general world war would begin, the predominant Soviet view is that a future war would start with a surprise attack on the Soviet Union. This attack would be preceded by a period of increased tension between the potential adversaries, i.e., by a political crisis. However, Soviet planners do not discount the possibility of a future world war being started as a result of an accident or miscalculation.⁴⁰

Once hostilities have begun, the nature and characteristics of a future war are generally agreed upon by Soviet writers. A future general

war would be a war between two opposing systems: socialism and imperialism.⁴¹ Consequently, the war would be fought for unlimited ends, i.e., for the existence of one system or the other, and would be a war of coalitions of countries aligned with one system or the other.⁴²

Future war will undoubtedly involve an exchange of nuclear weapons resulting in unprecedented destruction and devastation. The initial period of the war will have more significance than in any previous war. The first minutes and hours will be extremely intense with the adversaries spending the major portion of their long-range air and missile forces⁴³ and perhaps their entire stockpile of peacetime nuclear weapons.⁴⁴ Soviet military strategy calls for the simultaneous destruction of the enemy's armed forces and strategic targets in the enemy's interior.⁴⁵ This would be the objective of initial nuclear strikes effected through the use of every available means of delivery. Targets for destruction would include the enemy's strategic offensive forces, administrative-political centers, industrial plants, large cities, and government facilities.⁴⁶

As a result of the use of nuclear weapons, a future war will be intercontinental with enormous spatial scope.⁴⁷ It would take place over a wide area and would "actively involve most of the world's countries and peoples within a short period of time."⁴⁸ The Soviets foresee the use of chemical and biological weapons in conjunction with nuclear strikes resulting in enormous territories contaminated with radioactive substances and chemical and biological agents.⁴⁹

While the debate as to whether a future war will be a long war or a short one has not been adequately settled, it appears that the Soviets have planned for a protracted war. The majority of Soviet military writers hold that the initial nuclear strikes would be followed by theater cam-

paigns in Europe and elsewhere, on land, sea, and air.⁵⁰ These campaigns would be fought with both nuclear and conventional weapons. The Soviets predict that they would have the advantage of their large ground forces already in existence and expect the surviving Soviet armies to be capable of defeating the proportionately weakened enemy forces.⁵¹

Armed combat in these campaigns would differ from that of previous wars. Nuclear weapons would obviate the need for attacks along a broad front. The requirement to seize and hold large expanses of ground would no longer exist. Those enemy territories not considered valuable would either have been destroyed by nuclear weapons previously or would be destroyed by tactical nuclear weapons during the course of the theater engagement. Ground troops would have to seize and hold only those areas considered to have significant post-war value.⁵²

The follow-on theater combat would require mass armies with a supporting economic base. "Soviet military strategy has concluded that, in spite of the extensive introduction of nuclear weapons, as well as the latest types of military equipment, a future war will require mass armed forces."⁵³ The fact that modern weapons will produce mass casualties and the possibility of a long and drawn out war necessitates having population resources available to replenish the armed forces and the industrial ability to produce war material to sustain the theater campaigns. Soviet military doctrine holds that a future war cannot be conducted with only the weapons and equipment in being at its start.⁵⁴

The Soviet leadership has thought about future war, has based their strategic doctrine on their perceptions of what such a war would be like, and has concluded that it is possible not only to wage a nuclear war but to win it.⁵⁵ They believe that nuclear war, like conventional war, is

and must be, a continuation of policy or a tool of policy.⁵⁶ In the Soviet view, a future war would terminate with the victory of the communist forces over the capitalist forces. They predict that a future war will naturally end in victory for the "progressive communist social-economic system over the reactionary capitalist social-economic system which is historically doomed to failure."⁵⁷

It is obvious from the preceding discussion that as long as the possibility of a future war exists, the requirement for a civil defense organization--which the Soviets consider a component part of the total defense system--exists. The Soviets define civil defense as "a system of national defense measures directed toward protecting the population, creating necessary conditions for maintaining operational stability of the national economy in wartime, and performing rescue and urgent emergency restoration work."⁵⁸ Thus, civil defense must protect the population and economic resources that would be required to sustain a future war after the initial period of strategic nuclear exchange.

History has shown that losses in the civilian population have increased sharply during wars waged in the 20th century. The figures from World War I indicate that of 10 million killed, 500,000 or five percent were civilians. During World War II, this figure increased to 25 million, or fifty percent of the total number of victims. The losses in the civilian population climbed to 84 percent during the Korean War, and it is estimated that these numbers would pale when compared to the casualties of a future nuclear war.⁵⁹ The Soviets believe that "preserving the population--the basic productive force of the country--ensuring economic stability and preserving the material and technical resources are matters of paramount importance during a future war. Thus, under modern conditions, civil

defense has become a factor of strategic importance. To a considerable degree, the success of civil defense predetermines the viability and the stability of the country."⁶⁰ In a modern war, victory will be gained by the country having an economy which, despite losses and damage suffered in the course of the war, maintains the capability of supplying its armed forces with everything they require, and of supplying the country's population with foodstuffs and basic necessities.⁶¹

The Soviet leadership has made clear that victory in a future war is impossible without assuring the survival of the Soviet Union as a political system, a state, and a military-economic power, i.e., impossible without an effective civil defense capability.⁶²

By building up their armed forces and by renewed emphasis on civil defense, "it is clear that the Soviets recognize as absolutely essential the acquisition of tremendous intercontinental striking power, and its corollary of home defense to weaken the enemy's long-range attack."⁶³

This study will examine the Soviet civil defense program as it currently exists. Chapter One will examine the missions and organization of Soviet civil defense as well as its relationship to other Soviet organizations. Chapters Two through Four will deal with measures for protecting the Soviet population, for training the population, and for protecting the Soviet economy, respectively. The final chapter will evaluate the Soviet civil defense program from both a domestic and an international perspective. And finally, some conclusions as to how this author views the Soviet civil defense program will be drawn.

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CHAPTER I

THE TASKS AND ORGANIZATION OF SOVIET CIVIL DEFENSE

The organizational structure of Soviet civil defense is, to a large degree, determined by the content of those tasks for which it is responsible. By the same token, a well organized structure can ensure successful completion of the tasks which Soviet civil defense has been assigned. This chapter will examine those assigned tasks and discuss the organizational structure available to carry them out. In addition, a look at the relationship between civil defense and other Soviet organizations will be made.

The tasks of Soviet civil defense are complex and multifaceted. Also, they are, and must be, flexible. As the nature of a future war changes during its course, so too must the emphasis placed on each of the tasks of civil defense change.¹ Soviet writers have separated the tasks of civil defense into three distinct groups.²

The first group contains those tasks whose performance ensures the protection of the civilian population against the effects of mass destruction weapons and other modern offensive weapons. This constitutes the basic foundation of Soviet civil defense, not only because the performance of all other missions is impossible without population support, but also because "the safety and security of Soviet citizens always has been and will continue to be a matter of prime concern to the Communist

Party and the Soviet Government."³

The second group of civil defense tasks includes those measures which, when implemented during wartime, increase the stability of operations of the economy.⁴ Stability of operations is defined as the capability of industry and agriculture to turn out specified quantities of needed products, and the ability of transportation, communications, and other sectors of the economy to operate without interruption under wartime conditions.⁵ USSR Civil Defense Chief Altunin has stated that this task has become immeasurably more difficult as a result of the increased technological complexity of modern weapons, but that it is recognized as being so by the Soviet leadership.⁶ Adherence to the resolutions of the 25th CPSU Congress providing for further growth and improvement in the structure of societal production, placement and distribution of the nation's productive resources, and improvement in the stability of industrial and agricultural production, are seen as ways of reducing the difficulty of maintaining a functioning economy during wartime.⁷

The third and final group of tasks includes those tasks connected with neutralizing the effects of enemy employment of mass destruction weapons and, recently,⁸ the added task of combating the effects of natural disasters (earthquakes, floods, fires, industrial accidents, etc.).⁹ Included among the measures deemed necessary to offset the effects of mass destruction weapons are: the establishment of civil defense forces in advance and placing them in a state of readiness in case of a threatened attack; the organization and conduct of rescue and emergency repair activities in stricken areas; the rendering of assistance to victims; and the securing of uninterrupted government administration and operation of industry and agriculture.¹⁰

The three groups of tasks discussed above are explicit tasks which the Soviet civil defense organization is charged with carrying out. These tasks are considered explicit because they are constantly referred to by the civil defense leadership and in the Soviet press. In addition, while preparing civil defense units and the general population to complete these explicit tasks, another task, considered by this writer to be an implicit task, accrues to the civil defense organization. This additional task is the conduct of moral-psychological, military-patriotic education of the population. This task is considered to be implicit only because it is not directly referred to by the Soviets themselves as a direct task of civil defense. It is not a covert task, hidden from public view. On the contrary, it is considered an important aspect of civil defense training and is continuously referred to in the Soviet press.

The goal of this training is to prepare the population for the effects of nuclear weapons. The trauma of mass destruction weapons causing mass casualties and unprecedented devastation can be mitigated if the population is psychologically prepared for a war in which such weapons will be used. This training can prepare the Soviet people to endure possible severe trials and to instill in the people a permanent mental capability and readiness to endure the hardships of modern war and to retain confidence in their ability to achieve victory.¹¹ The Soviets believe that they have an advantage in this area as a result of their extensive civil defense preparations as well as from their entire moral-psychological, military-patriotic indoctrination program.

This type training, in fact, tends to be one of the most important aspects of the civil defense program in peacetime as it aids in gaining the population's faith in and acceptance of the regime. It becomes an

additional tool which the Communist Party can use to maintain its control over the population.

Successful accomplishment of the tasks of civil defense can be achieved through a whole range of measures carried out in peacetime, when there is a threat of attack, and during the conduct of a future war. In large measure, the effectiveness of the Soviet civil defense program is determined by its organizational structure.

General supervision and overall management of Soviet civil defense is exercised by the USSR Council of Ministers which implements party directives on the aims and tasks of civil defense.¹² Since 1961, USSR Civil Defense has been a part of the Ministry of Defense. Direct daily management of civil defense activities is the responsibility of the USSR Civil Defense Chief. This position was first established in 1961, when civil defense was transferred to the Ministry of Defense and was filled by Marshal of the Soviet Union V. I. Chuikov.¹³ An argument has been made that the Soviet mechanism for changing policies has been to replace incumbents with new personnel charged with carrying out new policy directives supplied by their superiors.¹⁴ The 1972 retirement of Marshal Chuikov and his replacement by Colonel General Aleksandr T. Altunin, lends support to this argument. While Chuikov held a higher rank than does Altunin, the new Civil Defense Chief has been made a Deputy Minister of Defense and has subsequently (1976) been appointed a full member of the Central Committee. By these actions, USSR Civil Defense has been placed on an equal level with the other elements of the Soviet armed forces.¹⁵ Increased Soviet emphasis on passive defense measures, signaled by the appointment and elevation of Altunin, seem to have followed rapidly behind the US/USSR agreement to limit ballistic missile defense systems.

Colonel General Altunin's career pattern is instructive. Altunin, 56 years old and a member of the post-war generation of better technically trained senior officers, previously served as Deputy Commander and then Commander of the Kaliningrad Military Garrison until 1968. He was then promoted to lieutenant general and given command of the North Caucasus Military District. Two years later, he was promoted to his present grade and given the position of Chief of the Defense Ministry Central Directorate for Personnel.¹⁶ In July of 1972, he assumed the position of USSR Civil Defense Chief and brought high level command and Moscow staff experience to the job.¹⁷ The close relationship between Civil Defense and the Soviet High Command is emphasized by the previous positions held by Colonel General Altunin and by the fact that the First Deputy Chief of Civil Defense is a Lieutenant General of Tank Troops, S. I. Kremenskiy.¹⁸

Furthermore, the civil defense commanders of the 15 Soviet republics are major generals or lieutenant generals. Active duty officers are believed to command the approximately 120 oblasts or third level government centers.¹⁹ It has been estimated that Altunin has at least seventy general officers working for him throughout the USSR.²⁰ Civil defense has come under the control of the Ministry of Defense not only at the highest levels of command but at all echelons.

The Soviet civil defense structure consists of two components: a military component and a non-military component.²¹ The military component provides the framework within which the non-military component is organized. The national civil defense organization, headed by the USSR Civil Defense Chief and a supporting staff, develops the necessary doctrine, plans, policies and programs; sets the standards for training; checks on program execution; has command of the military civil defense forces; and provides

an overall military command for both the military and non-military civil defense components.²²

The most important part of the military component--the Civil Defense Troops--are a regular part of the Soviet armed forces and have as their main tasks maintaining communications, monitoring and surveying radioactive and chemical contamination, and conducting heavy engineering projects as part of post-strike rescue and repair operations. These forces are also tasked to deal with natural disasters and to participate in civil defense exercises with non-military civil defense units. The Civil Defense Troops possess resources not generally available to the non-military units such as helicopters, heavy construction equipment, and large scale transportation resources.²³ These troops are believed to be organized as regiments attached to every military district in the USSR.²⁴

Below the national level, civil defense is organized in all of the USSR on a territorial/administrative and industrial/functional basis.²⁵ Organization and implementation of civil defense measures is the responsibility of the Councils of Ministers of the Union and Autonomous republics, the Executive Committees of the Soviets of Workers' Deputies, and the village soviets. Consequently, the heads of civil defense are the chairmen of the Councils of Ministers, the chairmen of the Executive Committees of the Soviets of Workers' Deputies, the chairmen of the rural and village soviets, and the leaders in the ministries and departments. At enterprises and in institutions, the heads of civil defense are the managers of these facilities.²⁶

Territorially, the civil defense organization parallels the governmental structure of the Soviet Union, i.e., from the all-union level through union and autonomous republics, regions, cities, city districts,

to rural districts and individual worker settlements and villages.²⁷ On an industrial basis, the organization parallels the vertical structure of the ministries and their subordinate components--including all levels of the economic structure, transportation, communications, education, and the like.²⁸ As noted above, at each level of the civil defense organization, whether territorial or industrial, the administrative head or chief manager is designated the civil defense chief in his area of responsibility. In practice, he appoints a deputy civil defense chief who handles daily management of the program and simultaneously serves as chief of the civil defense staff.²⁹ The civil defense staff aids the chief and his deputy in fulfilling their civil defense responsibilities and is the civil defense chief's organ of control.³⁰ The staffs in the republics, regions, large cities, as well as in some factories, are composed of or at least led by military officers on active duty.³¹ These staffs round out the military framework of the Soviet civil defense organization.

Also at each level, commissions are established that are responsible for the evacuation of personnel from the cities and installations. In the rural areas, these commissions are responsible for receiving and relocating the evacuated personnel.³² Evacuation commissions are subordinate to the civil defense chief and works in cooperation with the civil defense staff. A city district evacuation commission is composed of representatives from the party and soviet organizations, military headquarters, leading workers of planning, trade, health, police, educational, social service, and transport organizations.³³ At an installation, the commission includes representatives of the party committee, the management committee, the personnel section, the staff and the civil defense staff of the installation, and the heads of the individual shops.³⁴

Based on the various available departments or production units, so-called "services" are organized at each level and are immediately subordinate to the corresponding civil defense staff. Civil defense services are organized in the country as a whole, in the krays, oblasts, and rayons, in the union and autonomous republics, and at large industrial sites. They work in close cooperation with their corresponding staffs. The services devote their attention to the training of special formations (sub-units) and people to lead these formations in eliminating the consequences of the use of weapons of mass attack.³⁵ The services are organized along functional lines. For example, at a city or city district level, the services which might be created could include:

The Communications Service. This service is organized on the basis of the city or city district office of communications. Efficient communications are necessary to provide early warning to the population and to municipal officials concerning the threat of an attack. The communications service maintains an effective link between the city civil defense officials and district civil defense officials as well as between the chiefs of the other services.³⁶

The Service for Maintaining Public Order. This service is organized on the basis of the municipal police department. It maintains public order, ensures that all decrees of the civil defense chief and staff are carried out, regulates traffic during dispersal and evacuation operations, protects private and state property, controls panic, and isolates centers of destruction.³⁷

The Medical Service. Based on the municipal health department, this service organizes and trains subordinate civil defense units, selects and prepares sites for the relocation of medical facilities in suburban

zones, and coordinates the accumulation of medical and sanitation supplies and equipment. Following an attack, the medical service renders aid to the injured, provides decontamination treatment and arranges evacuation of the injured to suburban zones.³⁸

The Fire Fighting Service. This service is based on the municipal fire department and trains and outfits subordinate fire fighting units. It organizes preventive measures and assures their implementation. During periods of mass destruction, this service locates, contains, and extinguishes the resulting fires. It rescues survivors from burning buildings and structures as necessary.³⁹

The Material and Technical Supply Service. This service is created on the basis of planning, supply, and household organizations to provide civil defense units with a variety of construction materials, decontamination and disinfecting substances, spare parts, equipment, machines, combustible and lubricating materials, and water both for drinking and technical use.⁴⁰

In addition to the services discussed above, many other services, whose tasks are self-evident from their titles, could be formed. These include: the automotive transport service, the service for food and clothing supply, the power service, the engineering service, and the service for the protection of plants and animals.⁴¹ The civil defense structure is extremely flexible. Depending on local conditions and the availability of resources, the number, type, and composition of these services can be adjusted; or as in some small cities, it is possible not to have any services at all, in which case all the work is done by the civil defense staff.⁴² Civil defense services are usually not created at agricultural production sites with typical functions being carried out by

specialized formations.⁴³ In rural areas, civil defense organizations can logically be expected to have veterinary services, services for the protection of livestock, and services for the protection of crops.⁴⁴

An examination of Charts 1, 2, and 3 reveals the similarities and differences of the civil defense organizations of a city district, an industrial plant, and a rural district. All civil defense organizations below the national level, to include those not depicted, i.e., at educational institutions, at sovkhozes, at kolkhozes, and so on, follow the same basic structure. Each has a civil defense chief, one or more deputy chiefs, a civil defense staff, and various civil defense services and/or formations.

Chart 1 shows how the district organizations and agencies which provide the basis for the civil defense services, are subordinate to the civil defense staff concerning civil defense matters. Also, the relationship between the services and the specialized formations is shown, i.e., the Public Order and Safety Service trains and controls the Police and Militarized Security Units and so on for the other services.

The right hand portion of Chart 1 showing civil defense at a plant is expanded and shown in Chart 2. It must be remembered that only those services and formations that can be supported by the production units of the plant will actually be created. For example, if the plant in question did not have any transportation capability, then the Transportation Service and Transportation Commands, as shown in Chart 2, would not exist at that plant. It is normal at large installations for the civil defense chief to appoint three civil defense deputies: for evacuation and dispersal; for materiel; and for engineering and technology,⁴⁵ and this is also depicted in Chart 2.

CHART 1—Civil Defense Organization of a City District

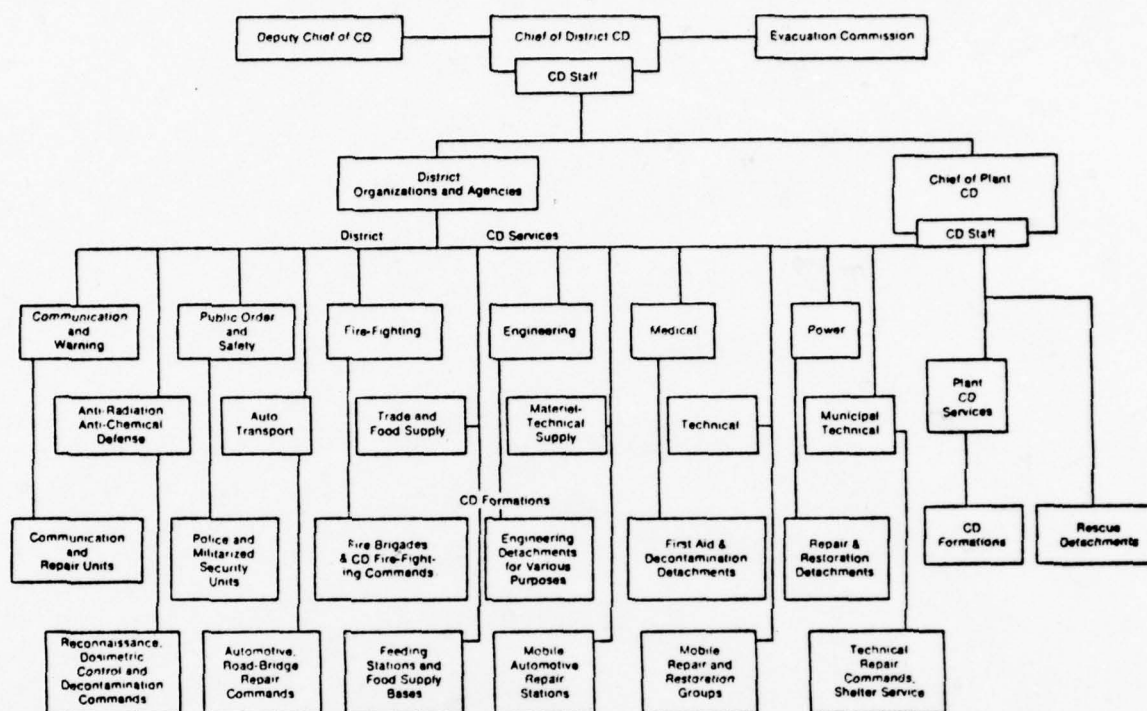


CHART 2—Organization of Civil Defense at a Plant

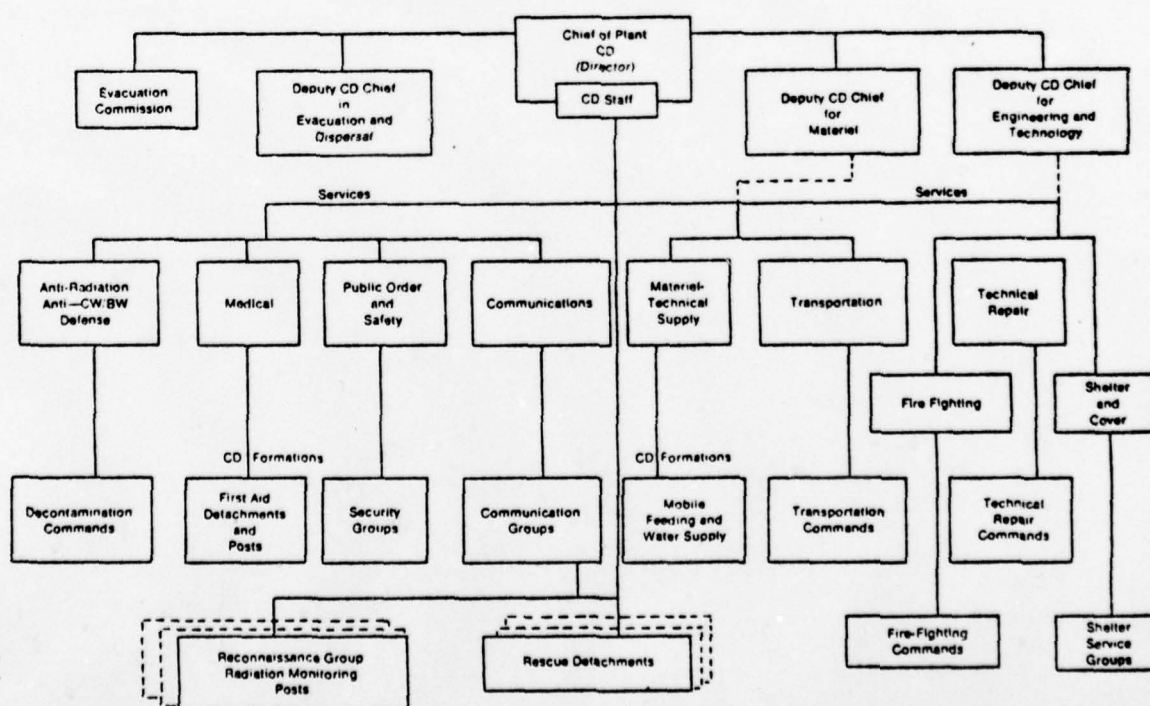
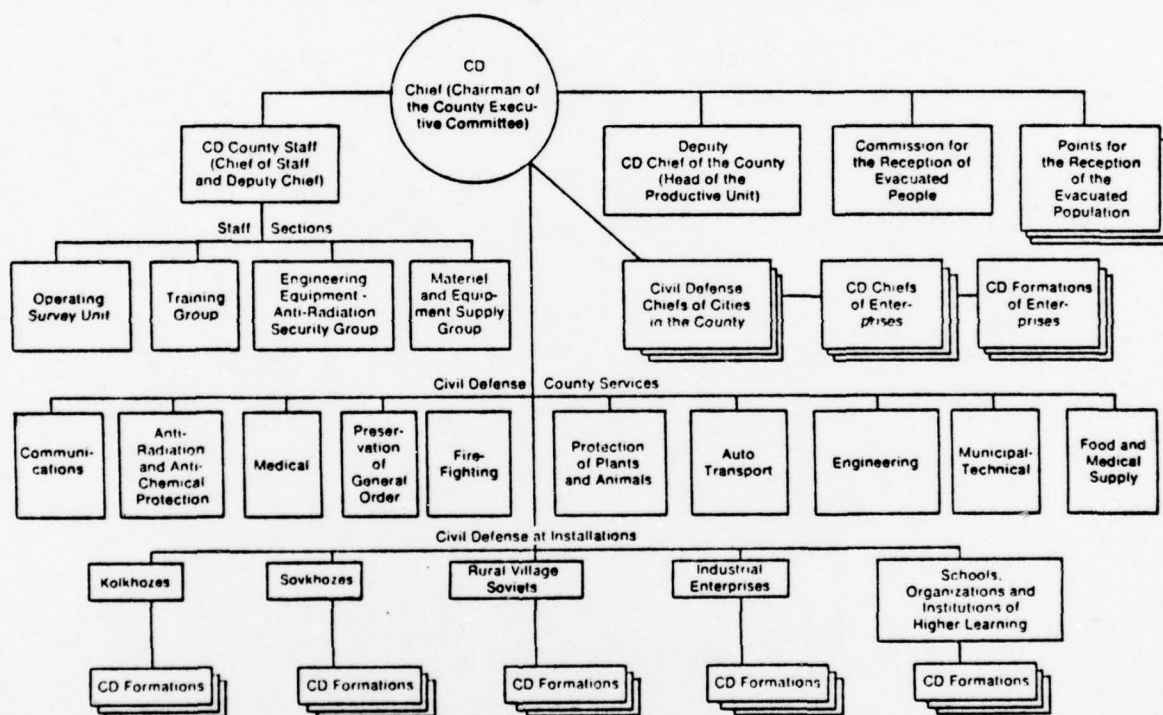


CHART 3—Civil Defense Organization of a Rural District (County)



SOURCE: Charts 1, 2, and 3, are from Leon Gouré, War Survival in Soviet Strategy: USSR Civil Defense (Miami: University of Miami Center for Advanced International Studies, 1976), pp. 70-72.

Charts 1 and 2 show the Evacuation Commissions which have responsibility for moving those personnel not involved in production, out of the danger area. Chart 3 shows the Commission for the Reception of Evacuated People and the actual Reception Points that would be established in the rural areas to accept these evacuated personnel. These commissions are one primary difference between the civil defense organization of a city, city district, or plant, and that of a rural district.

The staff sections shown on Chart 3 provide an indication of those that might be established at the various civil defense levels. All of the charts clearly demonstrate the flexibility inherent in the organizational structure of Soviet civil defense and are representative of typical organizations at the levels indicated.

The level of civil defense units below the services are called formations, as noted above. Formations are shock units that must be ready for action at all times. They make up the major portion of the non-militarized civil defense forces. Formations consist of detachments, teams, groups, brigades, sections, and posts of various designations. They are formed from the workers, employees, students, and general population. Men 15 to 60 years of age, and women 16 to 55 years old are included in them.⁴⁶ However, men with draft notices, pregnant women, and women with children less than eight years old are not included in these formations.⁴⁷ Formation commanders are selected from the most qualified personnel available. They attend civil defense courses periodically to sustain their expertise, and are responsible for the preparedness of their units.

Formations are of two types: general purpose formations and service formations.⁴⁸ General purpose formations perform general rescue work

in a zone of destruction, in natural disasters, and in industrial accidents. The service formations conduct special tasks similar to those performed by the higher level services and also reinforce and ensure the actions of the general purpose formations. At agricultural production sites where services are not normally organized, the tasks of providing first aid, fighting fires, maintaining public order, maintaining shelters, and so on, are performed by service formations. Formations are supplied with specialized equipment, instruments, and devices in accordance with their mission.⁴⁹

"Where possible, and especially in industry and essential services, formations and sub-units are duplicated in each workshift. Such an arrangement permits one part of the civil defense forces to be at the work site while the other can be evacuated from the danger zone to ensure its survival in the event of an attack, and can be used to conduct rescue and damage-limiting operations in the area of destruction."⁵⁰

In 1972, recognition was made of the usefulness of civil defense units in dealing with natural disasters. Combined units were organized from service formations and were given priority in training and equipment supply and were required to be maintained in an increased state of readiness.⁵¹ These units are credited with being extremely effective in dealing with natural disasters and are seen as helping to increase the overall preparedness of the civil defense organization.⁵²

Even a cursory look at the Soviet civil defense organization reveals that it must necessarily involve interaction with other Soviet organizations. As one Soviet author put it: "Viewed from the standpoint of its very essence, goals, tasks, and organizational principles, USSR Civil Defense is a national and state system. It was created for the purpose of defending the interests of all the people. Thus, all of our people and

all of our party, state, and social organizations have an interest in further strengthening and improving it."⁵³

The organizations represented at a three day USSR civil defense conference held in 1971 are indicative of this interaction. They included the Central Committee of the CPSU; the All-Union Central Trade Union Council; the Central Committee of the Komsomol; the Ministries for Culture and Education of the USSR and the RSFSR (Russian Soviet Federal Socialist Republic); the State Committees for Television and Radio, Press, and Cinema of the Council of Ministers of the USSR and RSFSR; the Central Committee of DOSAAF; the All-Union Znaniye (Knowledge) Society; the League of the Red Cross and Red Crescent Societies; the Committee of War Veterans; the League of Writers, Journalists, and Cinema Experts; and the editorial boards of major newspapers, journals, and book publishing houses.⁵⁴

Civil defense is an object of constant concern and attention by party organizations. Party political direction is provided for the organs of civil defense by the appropriate party committee.⁵⁵ According to directives of the CPSU Central Committee, local party agencies and the party organizations of national economic facilities bear responsibility for organizing political work in non-military civil defense formations.⁵⁶ Party organs play an active part in the selection, placement, education, and instruction of formation deputy commanders for political affairs and they determine the forms and methods of party political work with civil defense personnel.⁵⁷

As a watchdog agency to insure compliance with CPSU civil defense directives, local party organs check on the conduct of training, the availability of civil defense literature, and discuss issues concerning measures for strengthening civil defense at party meetings.⁵⁸ One principal

method used for determining the status of civil defense preparedness is the conduct of socialist competitions, i.e., competition between various civil defense units as well as between civil defense units and military units in the execution of civil defense tasks.⁵⁹ "The basis of socialist competition is its publicity, comparison of results, and comradely mutual aid. At the plant, the participants of the competition know who is ahead and who must be emulated. This forces the laggards to catch up and the leaders give them help. These competitions attract many spectators."⁶⁰

A further function of the party organs is educating and directing staff communists to display more initiative and creativity in the conduct of civil defense activities and to set the standards by their personal example.⁶¹ Where shortcomings in civil defense matters occur, "one must search for their causes primarily in the fact that certain party organizations have relaxed their attention toward this important state matter."⁶² The implementation of further improvements in civil defense has become one of the most important tasks of party organizations.⁶³

In addition to the Communist Party, the Soviet youth organization, the Komsomol, works toward strengthening civil defense preparedness. Many of its activities parallel those of the CPSU: discussion of civil defense matters at Komsomol meetings, checking on the status of civil defense training, and lending active support to civil defense staffs and formations. Komsomol units conduct seminars and publish wall newspapers devoted to civil defense.⁶⁴ Komsomol members are encouraged to join civil defense formations and in Zhitomirskaya Oblast, they account for a full seventy percent of all personnel in the medical detachments.⁶⁵ The deputy formation commanders for political affairs are frequently secretaries of Komsomol organizations.⁶⁶

Cooperation between the non-military units and the Soviet armed forces is also encouraged and considered essential. The military units provide lecturers, instructors, and equipment to aid in the training of the non-military forces. Coordination and cooperation between the Military Districts and the civil defense staffs aid in the effective planning and conduct of complex civil defense exercises. Particularly important is the close interaction between the civil defense medical service of the republics, krais, and oblasts, and the military medical service of military districts.⁶⁷ Additionally, many civil defense officials and instructors are retired military officers providing a further tie to the armed forces.

Another important organization that works closely with Soviet civil defense is the Volunteer Society for Assistance to the Army, Air Force and Navy (DOSAAF). This organization was initially responsible for civil defense training but following the adoption of the 1967 Law of Universal Military Service, this task was assigned directly to civil defense chiefs and their staffs.⁶⁸ By decree of the CPSU Central Committee and the USSR Council of Ministers dated 7 May 1966, and by a subsequent decree of the Seventh All-Union DOSAAF Congress,⁶⁹ DOSAAF was charged with conducting preinduction military training and actively assisting in the conduct of civil defense measures to include training the civilian population.⁷⁰ Experience in Gomel'skaya Oblast and Belorussia indicates that assistance from DOSAAF organizations has a favorable effect upon raising the level of civil defense readiness but that such effects are dependent upon the degree of cooperation between the civil defense staffs and the DOSAAF organizations.⁷¹ The effectiveness of the help given by the DOSAAF committees and organizations to the civil defense staffs is dependent upon the degree of knowledge about civil defense principles on the part of the

DOSAAF activists. The workers of many civil defense staffs and DOSAAF committees, in understanding this, organize training for the DOSAAF activists.⁷²

The overlap of preinduction military training and civil defense training is obvious. DOSAAF organizations are responsible for training their personnel in civil defense measures as future members of the armed forces. Instruction in the use of radiation detection and monitoring equipment, gas masks, and protective clothing is included as part of DOSAAF training. DOSAAF aids civil defense by training specialists for the services and specialized formations, to include drivers, motorcyclists, and communication workers.⁷³ The conduct of military patriotic education by DOSAAF units is frequently carried out jointly with civil defense personnel. DOSAAF units concentrate on disseminating civil defense knowledge, explaining to the population the means and methods of defense against weapons of mass destruction, and on providing help in conducting exercises.⁷⁴

DOSAAF committees organize exhibits and corners for civil defense knowledge, arrange the showing of special films, provide libraries and reading rooms with civil defense literature, and disseminate among the population the general civil defense handbook "Everyone Should Know This."⁷⁵ In addition, DOSAAF units help in the production of training aids, sponsor lectures, and arrange meetings with important civil defense personnel.⁷⁶ DOSAAF members take an active part in the construction of shelters⁷⁷ and the DOSAAF press gives significant space to questions of civil defense.

It was reported in 1972, that the DOSAAF Publishing House had published more than 17 million copies of 26 different books, pamphlets, and sets of posters concerning civil defense in the preceding five years.⁷⁸

The interrelationship of DOSAAF and civil defense is reinforced by

the overlapping leadership of the two organizations. In a majority of the republics, krays, and oblasts, the chiefs of staff and other civil defense workers are members of the leading DOSAAF bodies.⁷⁹ "All the chiefs of staff of the Ukraine, Uzbekistan, and Turkmenia have been elected to the oblast DOSAAF committees and many of the DOSAAF activists in turn are commanders of non-militarized formations. Thus, in Ashkhabadskaya Oblast more than 20 chairmen of the primary DOSAAF organizations are commanders of the non-militarized formations."⁸⁰

DOSAAF support for civil defense was reemphasized on 20 July 1976, when the Bureau of the USSR DOSAAF Central Committee approved the decree on "Measures for Further Improving the Work of the DOSAAF Organizations in Propagandizing Civil Defense Knowledge and Helping Civil Defense Measures."⁸¹ Active aid for civil defense will continue to be an important task of DOSAAF.

In addition to those organizations discussed above, civil defense units work closely with the trade unions, the Znaniye Society, the Committee for Physical Culture and Sport, and the committees of the Red Cross and Red Crescent Societies. Civil defense measures have been included as part of the training conducted during the summer military games for youth: Summer Lightning (Zarnitsa) and Eaglet (Orlenok). The interaction between these various party, government, and social organizations and Soviet civil defense serves to reinforce the importance of civil defense and to aid in the dissemination of civil defense knowledge among the populace.

The size of the Soviet civil defense organization is difficult to estimate. However, one author has concluded that the number of civilian participants number at least 30 million.⁸² Additionally, the number of Civil Defense Troops has been placed at between 70,000 and 100,000.⁸³

The cost of the Soviet civil defense program is likewise difficult to measure. Many of the funds spent on civil defense are provided by the various ministries, factories, educational institutions, armed forces, etc., and are hidden from view. A number of experts have concluded that in order for the United States to achieve protection similar to that of the Soviet Union, the cost would be at least one billion dollars a year.⁸⁴ This figure provides some measure of the extensive resources the Soviets have dedicated to civil defense.

It appears clear that the Soviet leadership is serious about civil defense. The Soviets have devoted a great deal of time, effort, and scarce resources to the evolution of an extremely flexible civil defense organization that is meant to include every element of the Soviet population. While the formal structure can change from location to location, the unity of command exercised by the civil defense chiefs and their staffs, allow the Soviet leadership to bring pressure to bear as necessary to accomplish the desired civil defense goals. By stressing the overlap and interaction of civil defense with virtually every other Soviet organization, the leadership can guarantee that, at a minimum, civil defense will be an object of discussion and thereby aid in the moral psychological conditioning of the population. By virtue of an examination of only the tasks and organization of Soviet civil defense, one can conclude that the potential, if not the actuality, represents a formidable asset.

NOTES

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82. Gouré, War Survival, p. 74.

83. Frisbee, "The Imbalance in Civil Defense," p. 54.

84. Ibid., p. 55.

CHAPTER II

PROTECTING THE POPULATION

One of the major tasks of Soviet civil defense is that of protecting the Soviet population from the effects of mass destruction weapons.

"The people create history and all material and spiritual values. Victory in war will go to that side that is best able to protect its productive strength--its people. In the event of war, the purpose of our civil defense system will be to protect our most priceless capital--our Soviet people--active builders of communism."¹

In order to protect the population from the effects of mass destruction weapons, the Soviet civil defense organization employs a variety of measures. Included among these measures are: the early warning of the population against the danger of enemy attack, the dispersal of labor and service enterprises of large cities to outlying areas, the evacuation of personnel not involved in production from the cities to rural areas, the provision of individual means of protection to the entire population, the construction of blast and fallout shelters, the preparation and equipping of civil defense formations, and the mandatory general training of the population on methods of protection from weapons of mass destruction.²

In order to provide early warning to the population, Soviet civil defense has established nine separate and distinct warnings: "threatening situation," "air alert," "close protective shelters," "all clear," "threat of radioactive contamination," "radioactive contamination," "chemical

attack," "biological contamination," and "threat of flooding."³ Each of these warnings requires specific actions on the part of the population and the civil defense units, and they are trained to respond accordingly.

The decision as to whether to issue a "threatening situation" warning is made by the Soviet government.⁴ The warning is then promulgated by governmental and civil defense organs through messages communicated directly over radio networks, television, and other facilities. The "threatening situation" warning puts the entire country in a status of increased readiness and would usually be precipitated by heightened international political tensions. Consequently, the exact period of warning provided by this signal could vary from a few hours to several days.⁵ The "threatening situation" alerts the population to the fact that an attack is deemed imminent and requires rapid and specific actions. Upon the announcement of a "threatening situation," the following basic measures are required to be carried out:

1. Administrative posts, warning systems, communications services, reconnaissance units, observation posts, etc., are put on full readiness.
2. Individual means of protection (gas masks, protective clothing, etc.) are issued and preparations for the simplest means of defense are organized by the population.
3. Blast and fallout shelters are prepared for workers on plant shifts which continue production.
4. Traffic control and security is organized, evacuation routes are cleared and controlled, and population dispersal areas are prepared.
5. Dispersal of workers and employees is accomplished.
6. Personnel not engaged in production are evacuated to outlying areas.

7. Fallout shelters are built for the entire population of small cities and rural areas.

8. Farm animals, plants, food products, forage, and water are protected from radioactive, chemical, and biological contamination.⁶

The remaining alerts and warning signals are issued by the civil defense staffs and command posts. The signal "air alert" is broadcast over the radio network and is duplicated by sirens and intermittent whistle blasts from factories, trains, and ships.⁷ The "air alert" requires all personnel to take refuge in blast or fallout shelters. The procedure an individual follows is dependent upon where he is located at the time the "air alert" is sounded. If at home, he turns off the gas, electricity, heaters, and so on; gathers his individual means of protection; ensures his neighbors have heard the warning; and proceeds to the nearest shelter.⁸ If at work, the individual follows the instructions of his superiors. Usually, the majority of workers will stop work and go to their designated shelters. A few workers will remain on the job to ensure the orderly cessation of the work flow. For these workers, individual shelters near the place of work are provided.⁹ If at locations other than home or work when the "air alert" sounds, the individual is to remain calm, seek shelter, and follow the instructions of civil defense personnel.

The "close protective shelters" signal is given following the "air alert" when a nuclear blast is expected to occur immediately. On this signal, the civil defense guards close the entrances and exits to the shelters.¹⁰

Once the threat of attack has ended, the "all clear" signal is given by the civil defense personnel. On this signal, the people leave the blast and fallout shelters and continue with their daily routine. Areas which suffered damage and destruction are not affected by the all clear

signal. Personnel in these areas are to await the arrival of civil defense rescue teams.¹¹

The "threat of radioactive contamination" signal is given in areas that are expected to be affected by the radioactive cloud of a nuclear burst.¹² The direction in which the cloud is moving and the time at which radioactive fallout is expected are announced.¹³ On receiving this signal, all personnel are to seek shelter at home or in fallout shelters, and are to take last minute measures to seal off their homes, barns, and other buildings from radioactive penetration.¹⁴ Food and water are protected from contamination as much as possible. Once observation posts equipped with radiation detectors, verify the arrival of the radioactive cloud, the "radioactive contamination" signal is given over the radio and by frequent blows on a rail, gong, or bell.¹⁵ On this signal, personnel are to don their individual means of protection. Depending upon the level of radioactivity, personnel may have to remain in shelters for several days. Once authorized to leave their shelters, decontamination measures are initiated. Further decontamination is accomplished at special washing stations set up in bathhouses, sanitation posts, and public showers for this purpose.¹⁶

The population is informed of the enemy's use of toxic chemical agents by the "chemical attack" signal given over the radio and by frequent blows against sounding objects such as rails, gongs, and bells.¹⁷ On hearing this signal, the population is required to put on their individual means of protection and proceed to the nearest shelter. Personnel are to remain in the shelters until orders to leave come from the civil defense staff. Upon leaving the contaminated area, measures are taken to decontaminate personnel and equipment.

The "biological contamination" signal is used to warn the popula-

tion of the use of biological weapons by the enemy. This signal is transmitted over the radio network. When this signal is given, the population is required to take cover in the nearest shelter. Those personnel caught in the open, or in the event that sufficient shelter space is not available, are to put on their individual protective equipment. Immediate steps are taken by civil defense personnel to limit the spread of the infectious diseases. The contaminated area may be quarantined as necessary.¹⁸ The civil defense medical service works to identify the biological agent used by the enemy and initiates preventive measures to contain the disease within the contaminated area.¹⁹

The "threat of flooding" signal is used to warn the population of possible flooding due to the damage or destruction of water control devices such as dams and the like. Areas of anticipated flooding are evacuated. If at all possible, this evacuation is conducted in advance when the "threatening situation" signal is given.²⁰

Through this series of diverse warning signals, the Soviet civil defense organization is able to effectively warn the population of virtually every conceivable contingency associated with mass destruction and mass casualty producing weapons. Through early warning, a significant number of injuries and fatalities can be eliminated and the continued functioning of the wartime economy can be assured.

Another method of providing protection for the population is through the planned dispersal and evacuation of personnel from the cities. Since the end of World War II, the Soviets have alternated between emphasizing and de-emphasizing evacuation measures. Urban evacuation and dispersal were not included in Soviet civil defense planning for the first decade following the war.²¹ However, as a result of their experience in

World War II, the Soviets learned that evacuation provided an effective method of protecting both the population and industry. Obviously, the evacuations carried out during World War II were not designed to protect against mass destruction weapons but rather to prevent the capture of personnel and equipment by the invading German forces. Nonetheless, the planning and techniques used during the war provided a valuable experience base for modern day evacuations. The oscillations of the Soviet leadership with regard to the effectiveness of and emphasis on evacuation largely parallel the varying Soviet view of the possibility of providing adequate shelter for the entire urban population. Emphasis on evacuation was justified on the grounds that it was both too costly and too impractical to build shelters for everyone as well as on the grounds that the Soviet Union possesses vast territories and relatively large distances between cities that could accept evacuees. Early considerations of urban evacuation were generally limited to the non-working and non-essential elements of the population, while current dispersal and evacuation plans deal with the entire urban population. Currently, the Soviet Union is attempting to provide as many shelters as possible while at the same time planning for large scale urban evacuations. That is, they are trying to maximize both methods of population protection within their budget limitations.

Prior to examining how the dispersal and evacuation program is designed to work, a few general concepts must be understood. First is the definition of what the Soviets refer to as the "outer zone." The outer zone is the territory between the anticipated area of destruction of a target city and the border of the region, area, or republic in which the target city is located.²² Second, is the difference between dispersal and evacuation. Dispersal is the organized withdrawal from the major cities

and the distribution in the outer zones, of the workers from the industrial facilities that are expected to continue operation within the cities during wartime. Dispersal also refers to those workers that provide essential services to those factories, i.e., power, heat, water, etc. Dispersed workers are scheduled to return to their work sites in shifts and return to the outer zones to rest.²³

Evacuation refers to the organized withdrawal of the non-essential elements of the population from the urban areas to the outer zones²⁴ and to the removal of the residents in a zone of possible flooding to safe areas.²⁵ It is anticipated that certain city enterprises would be evacuated to the outer zones such as small factories and educational institutions whose activities could be continued in the rural areas.²⁶

A further distinction between dispersal and evacuation is the distance from the anticipated area of destruction to which workers and non-essential personnel would be evacuated. Because the workers are expected to commute between the city and the outer zone, they are relocated closer to the city than are the evacuees. This distance is planned to be from 60 to 80 kilometers but could be as distant as 120 kilometers where necessary.²⁷ Round-trip travel time is planned so as not to exceed from 4 to 5 hours and the dispersal sites are established near existing transportation routes to facilitate travel.²⁸ Evacuees are to be sent further into the rural areas where they are to remain until the danger has passed. At the completion of dispersal and evacuation operations, the only people remaining in the city are the operating shifts of the various enterprises and the essential municipal service personnel. "By no means do we wish to imply that the dispersion of workers and employees and the evacuation of inhabitants should result in the city's life coming to a complete stand-

still. No, dispersion and evacuation should cause no halt in the operations of industrial enterprises, transport, communications, or other vitally important installations. They must, and will, continue their work of ensuring that production plans are carried out."²⁹ Through this method of population protection, Soviet planners expect to limit casualties to no more than 5 to 8 percent of the urban population.³⁰

It is anticipated that both the dispersed workers and the evacuated population will be housed in the homes of the rural population. Evacuated organizations, medical facilities, educational institutions, and the like, will be distributed among the public facilities in the outer zone.³¹ In the Soviet view, a socialist regime with a planned national economy, public ownership of land, houses, enterprises, and utilities, is particularly conducive to preparing evacuation regions to receive the urban population.³²

Due to the large scale of dispersal and evacuation operations, it is imperative that civil defense chiefs and their staffs effect as much planning and preparation as possible during peacetime. The dispersal of workers and the evacuation of their families is conducted on the production principle, that is, by their places of employment.³³ This is made possible by the fact that many Soviet factories control housing for their employees. Relocation areas are designated in advance and the factories are responsible for preparing these areas to accept the dispersed and evacuated personnel. The evacuation of the non-working population is organized on a territorial basis through coordination with the housing administrations.³⁴ That is, all of the residents of a particular city district are relocated to the same rural area or areas depending upon the population density and the ability of the rural area to accept evacuees.³⁵

The evacuation commissions discussed in the previous chapter are

responsible for the planning and smooth execution of dispersal and evacuation operations. The activities for which these commissions are responsible include: 1) the identification and registration of the population, enterprises, and organizations that are subject to dispersal and evacuation; 2) the identification of the relocation areas in the outer zones and an estimation of their capacity for accomodating evacuees; 3) the designation of relocation areas for specific enterprises, organizations, and districts; 4) the allocation of the means of transportation; 5) the planning for the provision of services to the dispersed and evacuated population; 6) the preparation and storage of dispersal and evacuation plans; and 7) the establishment of the timetable for the dispersal and evacuation operation.³⁶

Dispersal and evacuation operations begin when the "threatening situation" warning is announced. This procedure allows the maximum time to accomplish dispersal and evacuation measures as it is issued when the international situation has become tense and the possibility of an enemy attack exists.³⁷ Dispersal and evacuation are executed through a series of evacuation assembly points. These points are established in public buildings as near as possible to the means of transportation that will be used to evacuate personnel passing through them. The location of these assembly points is fixed in advance by the evacuation commissions.³⁸

Each person subject to dispersal or evacuation is assigned to a specific evacuation assembly point by his place of employment, place of study, or housing administration if unemployed. It is estimated that each assembly point will process between 1,000 and 3,000 persons.³⁹

Individuals are scheduled to report to the evacuation assembly points at specified times following the announcement of the "threatening

situation." The general civil defense instruction booklet, "Everyone Must Know and Understand This," provides the population with guidelines as to what items they should bring with them to the assembly points. The population is told to take "only what is necessary: clothing, underwear, bedding, toilet articles, and, without fail, personal documents."⁴⁰ These documents include passports, service cards, documents on education and specialty, birth certificates, and money.⁴¹ In addition, they are required to bring individual protective equipment, food for two to three days and essential dishes.⁴²

Each assembly point has a corresponding mode of travel, embarkation point, route of travel, debarkation point, reception point, and relocation area associated with it. Personnel are completely controlled once they report to the evacuation assembly point. It is believed that the Soviets use a booklet of detachable coupons to maintain this control. Each person presents a coupon to the civil defense personnel at the various points along the relocation route.

Where possible, only one method of transportation is associated with each assembly point.⁴³ All types of transportation are to be employed in implementing the dispersal and evacuation plans: motor transport, river, ocean-going, and particularly, rail. Railroads are considered to be the best means available because of their all-weather capability and their capacity for transporting large numbers of personnel. In those areas where railroad transport is poorly developed, motor transport will be the chief means of evacuation.⁴⁴ Privately owned automobiles are to be integrated into the motor transport plans. Motor vehicles are expected to travel in convoys of from 20 to 30 vehicles under the orders of convoy commanders and along previously designated routes.⁴⁵ Existing municipal transport

facilities, particularly the subways, will be used to the maximum extent possible during dispersal and evacuation operations.⁴⁶ To increase the speed in which dispersal and evacuation measures can be carried out, Soviet leaders have planned for the movement of the younger and healthier segments of the population by foot in organized groups of 500 to 1,000 persons.⁴⁷ The movement of personnel both by foot and in transport is referred to as the "combined method" of evacuation and has come into vogue only since Colonel General Altunin's appointment as Civil Defense Chief.⁴⁸

Regardless of the method of travel used to reach the rural area, once there, the population becomes the responsibility of the rural reception commissions. Because each factory, institution, agency, and city district has its relocation area assigned in advance, these rural commissions have already planned for the placement, feeding, medical assistance, and, if possible, employment of the evacuated personnel. Since it is unlikely that the rural areas would have adequate facilities to accommodate a large influx of urban residents, plans call for "the construction, in advance, of schools, dwellings, hospitals, laundries, and bakeries."⁴⁹ The urban factories and institutions that will be relocated to these areas are required to aid in this construction by contributing both manpower and material.

Soviet sources have not stated the actual number of urban residents that are expected to be dispersed or evacuated. However, the population of the Soviet Union, as of mid-1974, was estimated to be 251 million, of which 151 million were classified as urban residents. The number of persons subject to dispersal and evacuation is dependent upon the quantity of essential industry and services that is scheduled to be kept in operation in each city. Nonetheless, estimates have been made that Soviet civil

defense authorities plan to disperse and evacuate between 70 and 100 million urban residents.⁵⁰

Obviously, dispersal and evacuation measures are time dependent. With 3 to 4 days advance notice, it has been estimated that the Soviets could effectively evacuate their urban areas.⁵¹ This estimate accounted for the competing demands that would be placed on Soviet transportation resources by preparations for war, and concluded that with only half of the total transportation capacity being used, some 100 million urban residents could be moved in four days.⁵² The question remains as to whether or not the Soviets will have four days advance notice of an attack. The Soviet leadership must believe that this advance notice is possible as dispersal and evacuation operations are considered to be one of the primary methods of protecting the population.

In addition to early warning and dispersal and evacuation measures, the Soviets have placed a great deal of emphasis on providing the population with individual means of protection. These items are divided into two categories: devices for protecting the respiratory system and devices for protecting the skin.⁵³

The Soviets believe that in a future war chemical and biological weapons will be used in conjunction with nuclear weapons. The individual means of protection are designed to provide some measure of defense against the effects of these type weapons.

The primary individual protective item for protecting the respiratory system is the gas mask. Gas masks are of two types: the filtration type and the air-supplied type. The filtration type mask is the most common as it provides protection against radioactive dust particles, chemical toxic materials, and most biological agents. It operates by filtering the

outside air through a series of chemically treated materials. In addition, the face mask provides protection for the eyes and face against contamination by toxic agents. This type mask has the disadvantage of not protecting against unknown agents and requires changing the filter cartridge when it becomes saturated with toxic chemicals and is no longer effective.⁵⁴

The Soviets manufacture a variety of filtration gas masks which are generally available to the civilian population. Special gas masks for children and a protective chamber for infants have also been produced. The gas masks are usually stored at the individual's place of work or with the housing administration near his residence. They are only issued for training purposes and in an actual emergency.⁵⁵

Completely self-contained respiration is made possible by the air-supplied type gas mask, which provides oxygen or purifies exhaled air to remove carbon dioxide and moisture. This type mask is used when filtration type masks cannot guarantee reliable protection, in highly toxic areas, when conducting operations with unknown toxic materials, and when working in an oxygen deficient atmosphere. These masks are not nearly as prevalent due to their increased cost and the requirement for them in only limited circumstances. The air-supplied mask has the disadvantage of being relatively heavy and of having a limited period of operating time before the oxygen tanks or the chemical compounds are exhausted.⁵⁶ In 1974, a new type air-supplied mask was made available to civil defense formations which can "protect the respiratory organs, eyes, and face of a person against any harmful impurity in the air regardless of its concentration and toxicity."⁵⁷

In addition to gas masks, a variety of respirators are manufactured that are designed to protect the respiratory organs from harmful aerosols.

They can provide adequate protection against the inhalation of radioactive dust which is likely to be the most common toxic material.⁵⁸ These respirators are similar to agricultural, pesticide, and paint respirators commonly in use in the United States.

The civil defense handbook, "Everyone Must Know and Understand This," provides instructions for making a cotton gauze mask that can adequately filter radioactive dust.⁵⁹ Because respirators do not have a face covering, goggles must be worn with them to protect the eyes.⁶⁰

A number of different type devices are available for protecting the skin, and like the gas masks, are of two types: isolation skin protective devices and filtration skin protective devices. The isolation type clothing is made of rubber or rubberized fabrics that provide protection for the entire body from all types of toxic vapors and droplets. This type protective gear is designed for use by civil defense personnel working in contaminated areas. It keeps the body heat in, however, and can cause heat stroke thus limiting its usefulness by reducing the length of time that it can be worn.⁶¹

The filtration type clothing is made from fabrics impregnated with a chemical coating that filters contaminated air as it passes through the fabric. Filtration type garments can be made from ordinary clothing by treating it with a soapy-oily emulsion. It is designed to provide the general population with protection while crossing or exiting contaminated areas.⁶² Since the general population will not have the specially manufactured protective clothing, they must adapt various types of dense fabrics to protect their skin from the effects of radioactive dust, chemical, and bacteriological agents: male clothing, skiing outfits, workers' overalls quilted jackets and various types of raincoats and cloaks made from

rubberized fabrics or synthetic materials. Any type of glove or mitten can be used to protect the hands. The feet can be protected by rubber shoes, boots, galoshes, felt boots with galoshes, and so on. It is recommended that women wear trousers in contaminated areas.⁶³

In addition to gas masks and protective clothing, individual first-aid kits for the treatment of exposure to radiation and toxic agents are available. Various prophylactic pills, anti-nausea pills, decontamination materials, and atropine syrettes are included in these kits.⁶⁴

In conjunction with the population protective measures discussed above, the Soviets have allocated a sizeable share of their resources to the construction of shelters. While dispersal and evacuation measures can provide an effective casualty limiting system of defense, shelters are required to provide protection in the event sufficient warning is not available to permit the execution of these measures, as well as to provide protection for the production and service workers that will remain in the cities and to provide protection against radioactive fallout for the entire population.⁶⁵

Soviet civil defense publications identify two categories of shelter: blast shelters and fallout shelters. Blast shelters are generally located in the cities and are designed to protect personnel against all of the effects of nuclear, chemical, and biological weapons, as well as from the secondary effects of such weapons, i.e., fires, rubble from collapsed buildings, etc. The Soviets have design and construction plans for various types of blast shelters which are usually sophisticated structures. Complex ventilation equipment provides an adequate air supply for the personnel that occupy the shelter. This equipment can be either a filtration type ventilation system or an air regeneration type system.

The entrance doors are blast proof and provide airtight sealing to prevent the flow of toxic agents into the shelter. Emergency exits are available and are planned to be located a safe distance from the shelter to prevent blockage by post-strike debris. Where possible, blast shelters have an independent electricity source, pre-stocked water supplies, and connections to the city's sewer and heating systems. The shelters are provided with radio receivers, loudspeakers, and telephones. Food is not normally stored in the shelters and personnel are instructed to bring several days supply of food with them.⁶⁶

In addition to structures that are constructed specifically as shelters, Soviet planners have provided for converting existing structures such as basements, subway tunnels, and other underground facilities, to shelter use.⁶⁷ Soviet publications indicate that priority is given to the construction of blast shelters at industrial plants and other important installations to protect the working shift that will remain on the job.⁶⁸ Large blast shelters have a capacity of from 100 to 300 persons.

In rural areas where damage from blast effect is expected to be minimal, the prime requirement for protection is against radioactive fallout. The Soviets have designed a variety of fallout shelters and these shelters are generally less sophisticated than blast shelters. Fallout shelters can be made by adapting brick and wood buildings, basements, storage and refrigeration cellars, or by digging trenches and covering them with a layer of soil.⁶⁹ The latter type, called hasty fallout shelters, can be built from a variety of readily available materials: timber, boards, sheetmetal, bricks, cinder blocks, fascines, and so on.⁷⁰ Considerable attention has been paid to adapting and utilizing mines as civil defense shelters and plans for this exigency have been published.⁷¹

It is anticipated that urban evacuees will construct hasty fallout shelters upon arrival in their relocation areas and Soviet authorities hope to provide shelter for the entire population within 72 hours of the announcement of a "threatening situation."⁷² Due to the climate of the Soviet Union, the possibility exists that hasty fallout shelters may have to be built in frozen soil. Soviet planners have taken this into account and have even designed a machine that is capable of cutting and extracting frozen blocks of soil, permitting the digging of 1 to 2 meter deep trenches at a speed of 25 meters an hour. Additionally, plans for erecting hasty shelters by thickening the walls of existing buildings with snow have been distributed.⁷³

The length of time that will be spent in the shelters is dependent upon the rate at which local radiation levels decline. These levels are determined by civil defense personnel equipped with dosimetric measuring devices. The more sophisticated shelters have these devices built in. The Soviets anticipate that shelter occupancy will be rather short term and will vary from a few hours to three to seven days.⁷⁴

An accurate count of the total number of existing shelter spaces in the Soviet Union has not been published. However, it must be borne in mind that the Soviets have been active in building shelters since the late 1950's; that the program of providing shelters for essential workers has been reemphasized since the early 1970's; that the Moscow subway alone has been estimated at being able to shelter up to 1 million people⁷⁵ and that since 1973, with the introduction of practical training, shelter construction has become a part of routine civil defense training.⁷⁶ Furthermore, recent plans have emphasized building shelters that can serve both as shelters and for other uses, such as meeting places, movie theaters,

exhibition halls, and the like. These measures lend credence to the possibility that the Soviets will indeed be able to provide shelter for their population within a 72 hour period.

Needless to say, building a large number of shelters equipped with the various protective devices requires large scale resources and expenditures. The dual purpose type shelters referred to above are one method the Soviets are using to reduce the cost of these structures. Also, Soviet studies have shown that the cost of constructing a basement shelter or of adapting an existing basement for shelter use, costs approximately 40-50 percent of the cost of a separate or detached shelter. Consequently, built-in shelters are encouraged to conserve resources. The built-in shelter offers other advantages which include already existing access roads, and power, heat, water, and sewerage lines.⁷⁷

Regardless of the effectiveness of the measures described in this chapter, there can be no doubt that the Soviet citizenry will have a distinct advantage in a future war just by virtue of the fact that these civil defense considerations have been anticipated and thought through. The Soviets cite the Vietnamese example as proving precisely how effective population protective measures can be. For example, the Estonian civil defense chief of staff for propaganda has stated:

The war in Vietnam lasted for 12 years. During its last seven years, the American Air Force plastered the long-suffering country with over six million bombs. This is the equivalent of 450 Hiroshima bombs. During just 10 days in December 1972, 100,000 bombs were dropped on Hanoi, Haiphong, and other cities. As a result of this massive, barbarian bombing, 1,318 people were killed. The civil war in Vietnam was at its height. The efficient warning service, collective and individual shelters, efficient realization of plans for evacuation and dispersal all played their part. All of this was combined with the population's high level of discipline and fearlessness.⁷⁸

Clearly, in the Soviet view, population protection measures can

save lives and ensure the continued operation of essential Soviet industry during wartime. These measures can convince the population that survival is possible following a nuclear exchange and this belief on the part of the population serves to strengthen their resolve to commit the necessary resources to make the civil defense system work.

The implications of well defined Soviet population protection measures is equally clear. Such measures can protect the Soviet population from the effects of a nuclear war in which the Soviet Union is not a participant. As the number of states with a nuclear capability increases in the future, this role of population protective measures will take on increasing importance.

These measures can also make a budding nuclear power, like the People's Republic of China, seriously doubt its capability of inflicting significant damage on the Soviet Union, and serve to restrain its activities.

And finally, by reducing the anticipated casualties from a nuclear war with the United States to below the level of those experienced in World War II, the Soviets can reduce, if not totally eliminate, the "assured destruction" capability of the United States and gain a means of dealing with their opponents from a position of nuclear strength.

NOTES

1. Grechko, Army Brotherhood of Peoples, p. 12.
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214. 3. Gouré, War Survival, p. 161; Yegorov, Civil Defense, pp. 206,
4. Yegorov, Civil Defense, p. 206.
5. Ibid., p. 207.
6. Ibid., pp. 207-208.
7. Zh. I. Rimanova, ed., Everyone Must Know and Understand This
(3d ed.; Moscow: Voenizdat, 1975), JPRS, Translations on USSR Military
Affairs, No. L/5851, 12 April 1976, p. 20.
8. Yegorov, Civil Defense, p. 214.
9. Rimanova, Everyone Must Know, p. 20.
10. Yegorov, Civil Defense, pp. 215-216.
11. Ibid.
12. Rimanova, Everyone Must Know, p. 26.
13. Yegorov, Civil Defense, p. 218.
14. Gouré, War Survival, p. 165.
15. Rimanova, Everyone Must Know, p. 27.
16. Yegorov, Civil Defense, pp. 218-221.
17. Rimanova, Everyone Must Know, p. 29.
18. Gouré, War Survival, pp. 167-168.
19. Yegorov, Civil Defense, p. 224.
20. Ibid., p. 226.

21. Gouré, War Survival, p. 80.
22. Yegorov, Civil Defense, p. 72.
23. Ibid.
24. Kotlukov, Civil Defense, p. 69.
25. Yegorov, Civil Defense, p. 72.
26. Ibid.
27. Akimov and Il'in, Civil Defense at Agricultural Production Sites, p. 141; cited by Gouré, War Survival, p. 86.
28. Yegorov, Civil Defense, p. 73.
29. F. Kurbatov, "For Protective Purposes," Voyennyye Znaniya, April 1971, JPRS, Translations on USSR Military Affairs, No. 704, 20 May 1971, p. 50.
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31. Yegorov, Civil Defense, p. 73.
32. Ibid., p. 75.
33. Gouré, War Survival, p. 87.
34. Ibid.
35. Yegorov, Civil Defense, p. 75.
36. Ibid., pp. 75-76.
37. Gouré, War Survival, p. 89.
38. Yegorov, Civil Defense, p. 76.
39. Gouré, War Survival, p. 91.
40. Rimanova, Everyone Must Know, p. 19.
41. Voyennyye Znaniya, March 1974, pp. 28-29; cited by Goldhamer, The Soviet Soldier, p. 85.
42. Ibid.
43. Yegorov, Civil Defense, p. 77.
44. Kurbatov, "For Protective Purposes," p. 50.
45. Gouré, War Survival, pp. 92-93.

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47. Gouré, War Survival, p. 103.
48. A. Altunin, "The Main Direction," Voyennyye Znaniya, December 1973, JPRS, Translations on USSR Military Affairs, No. 1009, 21 February 1974, p. 49.
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60. Yegorov, Civil Defense, p. 114.
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62. Rimanova, Everyone Must Know, pp. 12-13.
63. "Individual Protective Equipment," Voyennyye Znaniya, April 1974, JPRS, Translations on USSR Military Affairs, No. 703, 17 May 1971, p. 29.
64. Gouré, War Survival, p. 79.
65. Ibid., p. 119.
66. Yegorov, Civil Defense, pp. 122-136.
67. Ibid., pp. 136-140.
68. Gouré, War Survival, p. 121.

69. Akimov and Il'in, Civil Defense at Agricultural Production Sites, p. 15.

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73. F. Ostroukh, "Winter Shelters," Voyennyye Znaniya, February 1971, JPRS, Translations on USSR Military Affairs, No. 718, 15 July 1971, pp. 31-38.

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76. M. Fakhrutdinov, "Formation of a Defense Fund," Sovetskaya Kirgiziya, 27 July 1976, JPRS, Translations on USSR Military Affairs, No. 1249, 5 October 1976, p. 30.

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CHAPTER III

TRAINING THE POPULATION

To say that the Soviet civil defense program is a complex one is really an understatement. From the brief examination, in the preceding chapters, of the formal organization of Soviet civil defense and of the means envisioned to provide protection to the population, it becomes readily apparent that for these measures to be as effective as possible requires a finely tuned response from the population. The people must be able to recognize the various warning signals and react to them instinctively. They must know how to prepare and use the various items of individual protection and they must know how to build protective shelters, how to use the life support equipment found in them, and, perhaps most importantly, they must know what procedures will be used to effect their dispersal and evacuation. How the Soviet populace acquires this knowledge is the subject of this chapter.

Soviet writers emphasize again and again the importance of population training to civil defense. Colonel General Altunin made this point when he stated: "We can construct protective installations, acquire the necessary amount of individual equipment, and plan dispersion and evacuation, but unless we promptly teach the population to take advantage of these means correctly, if we do not teach each person practical skills, these means will not be as effective as we expect them to be."¹ Another author expressed the same sentiment in the following manner: "The success-

ful carrying out of the tasks assigned to civil defense will depend to a considerable degree upon the training level of command personnel and the paramilitary formations and also upon the ability of the population to protect themselves against mass destruction weapons. Thus, one of the principal tasks of civil defense during peacetime is that of ensuring the mandatory training of the population in the means and methods to be employed in acquiring protection against the weapons of mass destruction."²

Civil defense knowledge and the completion of civil defense training has become the duty and responsibility of every citizen.³ "The patriotic duty of every Soviet person is to master the necessary minimum of civil defense knowledge. By studying the methods of protection from weapons of mass destruction, every worker and employee, kolkhoz member and creative worker, schoolboy and pensioner, contributes his share of work to the common cause of strengthening the defense capability of our socialist fatherland."⁴ This responsibility of citizens to master civil defense knowledge is not new. The first mandatory training course was established by the 2 July 1941 decree of the Council of People's Commissars⁵ and civil defense courses have been compulsory ever since.

For a short period following the conclusion of World War II, civil defense training was not conducted. In 1954, however, this type training was reinstituted and between 1954 and 1973, six different compulsory training courses were conducted. These courses varied in length from 10 to 22 hours and required a number of years to be administered to the entire population. Following the appointment of Colonel General Altunin as USSR Civil Defense Chief and the renewed emphasis on civil defense, a new 20 hour course was instituted in 1973.⁶ This 20 hour program is sufficient to provide the population with the "necessary minimum of civil defense

knowledge." Among the subjects included in the course are such things as: the nature and effects of nuclear, chemical, and biological weapons; the various civil defense warning signals and the proper response to each; the use of gas masks and the operation of shelter equipment; an explanation of evacuation procedures; instruction on how to build hasty fallout shelters; how to apply first aid and carry out individual decontamination; and how to perform rescue and emergency repair operations.⁷ The 20 hour program is not just a one-time requirement but a course that each citizen must complete annually.⁸ The training for completion of the 20 hour course is conducted by the individual's place of employment, place of study, or by the housing administration for the non-working personnel.

A goal of the Soviet leadership has been to ensure that all segments of the population receive the 20 hour course. To this end, increased emphasis has been placed on the training of the non-working population, a segment of society that has often been neglected in the past. The training of the non-working population has consisted of independent study of the current civil defense booklet ("Everyone Must Know and Understand This" or "What Everyone Should Know," etc.), the viewing of films, and the listening to civil defense broadcasts on radio and television.⁹ While these methods play an important part in the training of housewives and pensioners, they are not considered to have provided adequate knowledge.

Consequently, the housing offices have been tasked to organize study groups led by reserve and retired officers. In the city of Kalinin, study groups of 20 to 25 members have been formed among the non-workers. Reserve and retired officers conduct classes with them twice a month. The housing offices contain many former military men and war veterans and these people are encouraged to organize the training in the residential

sector.¹⁰

The housing offices are required to have civil defense corners, agitation centers, and classrooms available for the conduct of this training. In the rural areas, rural clubs and libraries are required to hold civil defense conferences and to maintain a supply of civil defense materials for distribution to the population.¹¹

The "necessary minimum of civil defense knowledge" is just that--the minimum. Civil defense directors, members of the civil defense staff, service and formation commanders, and personnel assigned to formations are required to undergo additional training each year.

Formation personnel undergo a more extensive program of training which includes general and specialized training required by their formation assignment.¹² That is, formations concerned with public safety and order train in police methods, fire fighters train in extinguishing fires, medical personnel train in treating the injured, and so on for all of the specialized formations. Those formation personnel that are undergoing the 20 hour program for more than their first year advance to specialized training immediately upon meeting the required norms. This approach precludes wasting time by repeating those subjects that the well-trained people know and know how to do.¹³

In addition, all personnel are required to participate in civil defense exercises and competitions which provide both additional training and a method of evaluating the status of training within the formations and among the populace.¹⁴

The compulsory training of the population is conducted on the principle that the leader teaches his subordinates.¹⁵ Thus, the training of key personnel becomes the cornerstone of all civil defense training.

"The decisive element in the entire system of civil defense measures is the training of the supervisory and command management personnel from top to bottom."¹⁶ The Soviets attempt to conduct training at the plant, installation, school, or housing office with which the individual is associated.¹⁷ In this manner, the leaders are able to tailor the training to the peculiarities of their installation. For example, at a plant that produces or uses flammable materials, increased emphasis is placed on fighting fires; at a kolkhoz, increased emphasis is placed on protecting crops and livestock; and so on for other type installations. In order to accomplish this, the leaders must personally meet all of the civil defense standards before requiring their subordinates to do so. They must be able to determine what needs to be done at a given moment and what their subordinates need to be taught. They must create a reliable materials training base and conduct practical exercises themselves.¹⁸ The principle that the leader teaches his subordinates "requires that management and command personnel be able to deal with situations knowledgeably, be in complete mastery of the equipment entrusted to them, master the devices and means of work in the different conditions of zones of attack or when dealing with the consequences of natural disasters or industrial accidents."¹⁹ In training his subordinates, the supervisor also learns himself, discloses shortcomings, finds ways to eliminate them, displays initiative and sharpness, improves his self-discipline, and raises his responsibility for the accomplishment of civil defense missions.²⁰

The civil defense management and supervisory personnel have been provided a comprehensive system by which they can acquire the necessary knowledge and skills to meet their civil defense leadership responsibilities. A series of civil defense courses have been established at the republic,

oblast, and rayon levels to instruct the management personnel. To a large extent, the effectiveness of these courses determines the effectiveness of all civil defense training and Colonel General Altunin has called for a strengthening of these courses.²¹ The training of civil defense chiefs of installations, their deputies and specialists, and also the corresponding chiefs of staff are planned in such a way that they all go through these courses in a three year period.²² Recently, a great deal of emphasis has been placed on teaching the command personnel the procedures for planning and conducting complex training exercises. A special text entitled The Manual on the Organization and Conduct of Complex Installation Training Exercises in Civil Defense, has been prepared to aid in accomplishing this goal.²³

The civil defense courses are supported by well equipped training sites that include skilled instructors, masters of production training, libraries, classrooms, exhibits and displays, and motion picture installations.²⁴ Most of the instructors have an academic background or a background of service in the Soviet Army, and many of them are veterans of World War II.²⁵

Reports indicate that these courses have been established throughout the USSR and are successfully training the supervisory personnel. The number of enterprise directors who received training at republic civil defense courses reportedly doubled in just one year.²⁶ There exists a one hundred percent capability of providing course work training to the command and management personnel in the Russian Federation.²⁷

In addition to the civil defense courses, the command and staff personnel participate in frequent command post exercises. These exercises provide the opportunity for checking the level of preparedness of the

staffs and enable the participating leaders to develop practical skills and to strengthen their knowledge of employing civil defense units. The command post exercises also provide a vehicle for evaluating the effectiveness of the instruction presented at the civil defense courses.²⁸

The courses and command post exercises are designed to supplement the practical and exercise training of the civil defense personnel that takes place directly at the installations. Here, the command personnel develop their subordinates into an effective, efficient, functioning unit and by so doing reinforce their own civil defense knowledge and gain actual experience in controlling civil defense forces.²⁹ "At the installation, on complex training exercises, on special tactical lessons and exercises, in classroom, group and practical lessons, staff drills, and command post exercises, as well as in the process of the practical training of the labor collective and the paramilitary formations, the supervisory and command management personnel learn to control the civil defense forces with consideration of the special features of their installation and its specifics."³⁰

Besides the introduction of the new 20 hour civil defense course, the period 1972-1973 was a turning point in another regard. A new philosophy of training was adopted that has the potential of significantly improving the readiness of all civil defense units. This new philosophy embraces the concept of practical training in comparison with the former method of conducting lectures, showing films, holding seminars, and the like.³¹ Since its introduction, practical training has proven to be so effective that the USSR Civil Defense Chief has called it "the main direction for the development of civil defense" for the future.³²

Practical training means that personnel undergoing civil defense

training will no longer do so only in a classroom. Rather than watch a film concerning the proper way to construct a hasty shelter, the trainees will actually construct such a shelter. Likewise, they will use the training time to check and prepare individual items of equipment such as gas masks, respirators, and protective clothing. The trainees are expected to practice the proper responses to the various civil defense warning signals, practice first aid measures, and conduct simulated emergency rescue and repair operations.³³ The new practical training program also includes training in preparation for dealing with the effects of natural disasters.³⁴

At the conclusion of the 20 hour program, the trainee is tested and must meet certain standards or norms before he is considered as having successfully completed the course. Among these standards are such things as donning the gas mask within a specified time limit, demonstrating the proper use of dosimetric and chemical monitoring equipment, performing first aid measures, decontaminating clothing and equipment, and so on.³⁵ Only upon successful demonstration of the type activities just discussed is the individual considered to have obtained the minimum necessary civil defense knowledge.³⁶

Practical training has provided civil defense with many advantages with regard to overall readiness. By actually constructing shelters during the 20 hour program, the shelter capacity of the Soviet Union has been increased.³⁷ During this training, actions are taken to protect valuable equipment at national economic facilities and to make these items less vulnerable to the effects of mass destruction weapons.³⁸ Further, while civil defense training sites had sufficient equipment to demonstrate its use during theoretical, classroom type training, the switch to practical

training has required an increase in the production and distribution of civil defense equipment.³⁹

Formation personnel undergo practical training as well--both during their 20 hour program and during specialized training. These personnel take a specialized training course in which the students acquire firm practical skills operating within the complicated conditions of areas subjected to enemy attack. Every student is given the opportunity to master the functions he would have to carry out in a specific specialized mission as a member of a crew, section, group, or the formation as a whole. The purpose of the specialized tactical lessons is to study all procedures and methods of operation with each student step by step, and then the entire mission of the formation as a whole. Following specialized tactical lessons, tactical exercises are conducted which serve to provide experience in coordination and interaction among formations.⁴⁰

The practical training program calls for the construction of special training sites where the trainees can practice their civil defense skills. There are a variety of these training sites with varying degrees of sophistication. The most elaborate ones contain all of the equipment necessary to conduct every possible type of civil defense operation. Simpler sites are called training points and natural areas and can be made by adapting the existing terrain to civil defense uses.⁴¹ The training site at the Kiev Scientific Research Institute for Microinstruments serves as an example of a sophisticated site. This is a whole training complex for practical training in the ways and means of conducting rescue and urgent repair and restoration work, extinguishing fires, constructing passageways, and restoring power transmission lines and communications. Personnel can also be trained in the decontamination of sections of road, rescuing

personnel trapped under rubble, administering medical aid, disinfecting clothing, footwear, transport, machine tools, appliances, and so on.⁴²

This complex was constructed on the institute's territory, next to an existing shelter in which a training center with well equipped classrooms and visual aids had been established.⁴³

The Kiev training site conforms closely to the guidelines issued by the USSR Civil Defense Headquarters concerning the construction of such facilities.⁴⁴ It is important that the peculiarities of each installation be taken into account during construction of the training sites so that training can be as realistic as possible. For example, at a chemical enterprise, the training site should reflect chemical storage tanks and personnel training should include controlling the spread of toxic chemicals. Training facilities must be representative of the installation where they are located.⁴⁵ The rural areas are no exception. Here, training sites are being created where methods and means of protecting people, animals, and plants are tried out and where work is done in adapting cellars and basements as radiation shelters, and in sealing off water sources, livestock areas, and grain storehouses.⁴⁶

The civil defense leadership has reported that the transition to practical training has been most effective at those installations that have "seriously and punctually carried out the requirements of the Chief of Civil Defense of the USSR with regard to creating a training logistics base."⁴⁷ New training sites are encouraged to have sectors for conducting rescue and emergency operations, antiradiation shelters, a site for decontaminating equipment, instruments, clothing and footwear, a room for checking gas masks,⁴⁸ collapsed buildings and dwellings, roads and drives with different type paving, and areas representing the peculiarities of the

particular installation.⁴⁹ It is emphasized that great expenditures on materials and manpower should not be required since it is possible to use second-hand materials, junk reinforced concrete products, broken bricks, and so on. Used materials and broken equipment are ideally suited for these purposes. The manpower requirements can be met by utilizing personnel undergoing civil defense practical training.⁵⁰ Also, local DOSAAF organizations can be called upon to aid in the construction of these facilities.⁵¹ Even with these savings in materials and manpower, the cost of training sites is high. Soviet sources indicate that these costs have ranged from 12,500 rubles (\$16,983) to 73,000 rubles (\$99,184) and even higher.⁵² Nevertheless, the Soviet leadership has required that every civil defense installation, either independently or in cooperation with its neighbors, have the following: a training site with model shelters and simple dugouts; training instruments, equipment, and protective means; technical means of training; textbooks and other civil defense literature; and necessary training aids.⁵³ All installations are encouraged to build scaled down models of facilities and equipment for the conduct of training and to allow trainees to visually create situations that might occur as a result of the effects of mass destruction weapons.⁵⁴

In order to sustain civil defense knowledge and expertise among the members of the formations and the general population, the Soviets conduct various competitions to determine the best trained and most knowledgeable formations and individuals among formations and installations. Regulations have been promulgated concerning how these competitions should be conducted. As a rule, the competitions are conducted after the completion of the general population training program. The participants must travel along a designated route that has various testing stations. Each

station requires a specific civil defense action. Certain stations allow the formations to compete by carrying out actions in a center of destruction according to their specialty, i.e., scouts, chemists-dosimetrists, medics, etc. The route sequence can be changed depending upon the designation of the particular formation.⁵⁵ In the rural areas, the competitions are modified to include equipping antiradiation shelters and making livestock structures airtight.⁵⁶ These competitions are conducted both within an installation and between installations.

Many installations conduct civil defense days, weeks, or months, i.e., certain designated time frames during which civil defense activities are emphasized more than is normal. Civil defense days are the most prevalent. The purpose of the civil defense day is to demonstrate the potential of civil defense forces for protecting the population against weapons of mass destruction, eliminating the consequences of the use of such weapons by the enemy, and for combating natural disasters. Civil defense days also serve to improve the training of the personnel assigned to the formations.⁵⁷ These days have a festive air about them and begin with the formations and the spectators being addressed by leaders of the party and soviet organs and by representatives of civil defense and other public organizations.⁵⁸ The equipment of the civil defense formations is demonstrated and the formations themselves perform their various duties for the spectators. The day ends with the conduct of competitions between the formations.⁵⁹

The winners of the competitions are recognized through various awards which include such things as having their names inscribed in a book of honor,⁶⁰ having the winners represented in Civil Defense Expert Lane at the local park,⁶¹ being awarded the "Outstanding Participant in USSR

Civil Defense" Medal,⁶² or being awarded monetary prizes and certificates of honor.⁶³ The leaders of the winning formations are awarded the badge "Expert in Civil Defense of the USSR" and "Badge of Honor of USSR Civil Defense."⁶⁴

In conjunction with the change to practical training and the building of complex training sites, the Soviets have embarked upon the conduct of complex civil defense exercises. Previously, formations would train in their particular specialty without regard to the work of other type formations. The complex exercises are conducted using a scenario approximating as closely as possible the conditions expected to exist following a nuclear attack. As a result of this realism, detailed planning and preparation are necessary prior to starting the exercise. Thus, it is planned that each installation will conduct such an exercise only once in a three year period. In the intervals between exercises, the headquarters, services, formations, and general population are intensively trained on the basis of existing training programs.⁶⁵

The main tasks of the exercises are to improve the system of defense for the production personnel; to reduce the vulnerability of the production activities of the shops, sections, and divisions; to master the procedures for converting to special operating conditions; and to prepare the leadership to control production and the civil defense forces.⁶⁶ It is during such exercises that the interaction of all formations is practiced and tested in the interests of accomplishing the missions of the rayon, the enterprise, the kolkhoz, or the sovkhoz.⁶⁷ Comprehensive civil defense exercises are designed to take place on the basis of a real civil defense plan worked out by the installation leadership. The facility director, armed with the knowledge acquired from the civil defense courses

and from smaller scale exercises, leads the comprehensive exercise taking into account the peculiarities of his facility.⁶⁸

The comprehensive exercise is conducted in cooperation with the territorial services of the district or city, the military units, and other organizations. All the workers of a facility and personnel of the units and services take part simultaneously in the exercise, resolving production and defense tasks in accordance with the civil defense plan. The population of the district closest to the facility is also involved in the training, including families of workers and employees of the given enterprise as well as the local non-working population.⁶⁹ These exercises are planned to occur at any time of the day and in any weather conditions in order to produce a maximum of stress on all participants.⁷⁰

At the installation, all life is subordinate to the production plan. Consequently, the conduct of civil defense training and exercises can cause a conflict between production work and civil defense operations. Soviet sources claim that the leadership and command personnel, without detracting from production, can take an active part in all stages of the civil defense training.⁷¹ Facility directors must reach a suitable combination of emphasis on production and defense so that, on the one hand, production is not interrupted, while on the other, the training is not used as a means of increasing production output.⁷² Production facility managers are reminded that during comprehensive exercises "useful and needed work must be performed such as outfitting protective structures and even hastening their construction based on national economic plans, laying municipal power networks and communications lines or repairing and restoring them, removing old and delapidated buildings, digging trenches to be used in the future as protective structures, and so on."⁷³

A typical complex exercise is planned to proceed along the following general path:

1. The party, Komsomol, DOSAAF, and trade union organizations are mobilized to aid in making the exercise successful.

2. A brief review of the exercise goals and tasks is conducted by the civil defense leaders.

3. The participants are notified of the "threatening situation" and preparatory work is begun. The civil defense chief makes assignments, checks on their execution, and inspects the formations. Work related to sealing the areas, blacking out windows, and the like are conducted. Non-working personnel prepare simple individual protective equipment, seal their apartments, and take measures to protect food and water supplies. Evacuation and reception points are activated according to the civil defense plan.

4. The "air alert" signal is sounded. Steps are taken to safely cease production activity and all personnel take to their protective shelters.

5. The civil defense chief determines when it is safe to send reconnaissance units from the shelters and subsequently dispatches the formations to the center of destruction. There, trapped and injured personnel are rescued and treated. Steps are taken to reduce damage from secondary effects and decontamination, recovery, and restoration measures are initiated.

6. Once production has been restored, the exercise ends. The leader and his deputies judge the effectiveness of the civil defense units and conduct a critique of the exercise. Shortcomings are identified.

7. Plans are made to eliminate the noted shortcomings, both in

training and in improving the stability of work at the installation.⁷⁴

In the summer of 1972, as a response to a series of forest fires, combined civil defense units were established to deal with the effects of natural disasters. The success of these units led to their creation in all republics, krays, oblasts, and economic facilities. They have already acquired a great deal of experience in fighting fires, landslides, floods, and other natural disasters.⁷⁵ These type operations are now seen by the Soviets as one additional means of providing practical training to civil defense units--not only the combined units, but also those that might be called upon to support them: medical teams, transport units, etc. When a severe mudslide hit the city of Kyzyl-Kiya in Kirgiziya, the material-technical service provided water to the damaged city; the engineering service conducted rescue and repair operations; fire fighters fought a huge blaze in the petroleum storage area; and the medical workers provided aid to the injured.⁷⁶ Civil defense personnel equipped with heavy equipment have aided recovery from heavy snowfalls throughout the USSR⁷⁷ and other units train annually in methods used to offset the effects of floods, to include the evacuation of personnel to safe areas.⁷⁸ The situations provided by natural disasters, however unfortunate, have aided the civil defense leadership in maintaining their units in constant readiness and have provided another realistic training vehicle that the leadership uses to maximum effect.

An important aspect of training the civilian population in civil defense matters concerns the training of Soviet youth. Until the 1970-1971 training year, civil defense training for school children was conducted only during the 5th and 9th grades.⁷⁹ With the development of special gas masks, respirators, and other protective equipment for younger

children, the need to instruct these children in its proper use became apparent. To meet this need, a test program was conducted among the 1st through 4th grade children in the use of this equipment. On the basis of the results of this test, it was decided to include civil defense instruction in the 2d grade curriculum.⁸⁰ This training is conducted once a week during physical training lessons and is primarily concerned with acquainting the students with the various warning signals and the proper responses to each, with how to prepare their gas masks for use, and with the rules of conduct in a shelter.⁸¹

The children in the older grades are organized into civil defense units to perform civil defense tasks at the school. They are also required to participate in a variety of exercises including a complex type exercise similar to those conducted at installations.⁸² In addition, during the summer months, the children are taught civil defense measures at the Pioneer Camps and during the military sports games "Zarnitsa" and "Orlenok."⁸³

The current program of civil defense training in the schools is as follows: Pupils in the second and fifth grades receive an elementary knowledge of the subject. Their programs are not extensive (6 and 15 hours respectively). In the ninth grade and at industrial trade schools, civil defense is an integral part of the initial military training program (29 and 20 hours respectively). Civil defense training at higher and secondary special educational institutions (50 and 29 hours respectively) is specialized according to the future professions of the students and in accordance with the latest requirements.⁸⁴ Students at the institutes are required to include problems of civil defense, as they relate to the students' specialty, in their graduation theses. This requirement has produced some significant innovations to civil defense problems.⁸⁵

In training the population to deal with the effects of mass destruction weapons, special attention must be devoted to considerations of moral, political, and psychological preparation. The late USSR Minister of Defense, Marshal of the Soviet Union A. A. Grechko, emphasized this preparation when he stated that the Soviet people must be educated "in the spirit of revolutionary vigilance as staunch fighters for the cause of communism and confirmed patriots who are capable of withstanding any experience during wartime and who honorably fulfill the obligations of a Soviet citizen under the most difficult conditions at the front and also in the rear."⁸⁶

The Soviet propaganda organs and organizations are charged with keeping civil defense matters constantly before the public. "The aim of these activities is to instill in the population a proper attitude toward the civil defense program and also to foster patriotism, support for the regime and its policies, and appreciation for what the leadership is doing to ensure the safety of the population, as well as to disseminate information about the program and local experiences in implementing it."⁸⁷ A modern war will be a test of an individual's moral strength and will demand tremendous courage and strict discipline. The effectiveness of civil defense in completing its mission depends to a significant degree on the indoctrination of the Soviet people so that they possess high moral, political, and psychological qualities.⁸⁸ Publicity plays an important role in this indoctrination process and the propagation of civil defense knowledge is one of the components of the system of military patriotic education for the Soviet people.⁸⁹

Every conceivable method has been used to achieve the wide dissemination of civil defense knowledge and the propagation of moral psychological

and military patriotic themes. Such means as lectures, briefings, seminars, practical conferences, topical evenings, evenings of questions and answers, verbal journals, quizzes, consultations, meetings of Local Air Defense veterans and distinguished members of civil defense, competitions, radio broadcasts, television shows, film lectures, slide shows, civil defense corners, and the setting up of display windows and exhibitions have all been used to great effect.⁹⁰

It is recognized that the task of increasing the effectiveness of civil defense propaganda cannot be accomplished successfully without the active support of the ministries, departments, libraries, parks, Houses and Palaces of Culture, trade union clubs, organs of the mass media, military units, Komsomol and DOSAAF organizations, the "Znaniye" Society, and the like, and consequently, their active participation is encouraged.⁹¹

"Revolution and war veterans, famous front line soldiers, and educators of youth are doing fruitful work among the population and the civil defense formations in developing courage, self-control, endurance, and the ability to counter fear and panic."⁹² Frequent radio broadcasts and television shows make use of these personnel to strike a patriotic note in the population and to provide examples worthy of emulation.⁹³

Many films concerning virtually every aspect of civil defense have been produced and are shown frequently throughout the Soviet Union. Some representative titles of the films available include: "Insuring the Stability of Work of an Installation," "Individual Means of Protection and Rules for Their Use," "The Complex Installation Exercise," "Fighting Fires and Other Natural Disasters," and many more.⁹⁴

Trips by groups of the civil defense staff, trade union and Komsomol organizations, the "Znaniye" Society, and cultural establishments

are made to the remote rural areas where they give lectures on civil defense themes. Mobile automobile clubs are used for the trips and they are outfitted and equipped with various visual aids and movie equipment.⁹⁵

Population and civil defense unit training is undoubtedly the primary activity of USSR civil defense in peacetime. Enormous resources have been devoted to such training, both directly and indirectly. The time, energy, and commitment of the people to reaching and sustaining a high level of civil defense readiness appears to be a real achievement. The switch to practical training and the allocation of vast resources to the building of sophisticated training sites clearly demonstrates that the Soviets are serious about civil defense. These measures, and the constant and unceasing propaganda concerning civil defense activities, leads one to the conclusion that the Soviet Union is indeed "a nation in arms,"⁹⁶ always preparing for the worst.

NOTES

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6. Gouré, War Survival, p. 194.
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12. A. Zaytsev, "In a Timely Manner and With Consideration of Special Features," Voyennyye Znaniya, October 1975, JPRS, Translations on USSR Military Affairs, No. 1206, 16 December 1975, pp. 16-21.
13. Voyennyye Znaniya, January 1977, JPRS, Translations on USSR Military Affairs, No. L/6919, 1 March 1977, p. 36.
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30. Altunin, "Main Direction," JPRS, 22 November 1976, pp. 2-3.
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CHAPTER IV

PROTECTING THE NATIONAL ECONOMY

An important task of Soviet civil defense is to guarantee the operational stability of national economic facilities during wartime. A future war might last only a few minutes, hours, or days, but then again, it may very well be a long, drawn-out affair. It would be foolhardy for any nation, least of all a nation that expects to win any confrontation in which it is involved, to fail to make adequate preparations for this eventuality. The Soviets have not overlooked planning for a protracted war.

Soviet writers have stated that if a future war does indeed become protracted, the armed forces will need a supporting economic base to sustain their military activities. Although the Soviets will have the advantage of their large armed forces already in existence at the start of the war, mass casualty weapons can be expected to quickly eliminate this advantage. Thus, according to Marshal of the Soviet Union, V. D. Sokolovskiy: "...planning on conducting a war, no matter how short and swift-moving, with only the reserve materials accumulated in peacetime, would be a mistake. It can be conjectured that in a future war the role of the war economy will not only remain what it used to be, it will even increase in importance."¹

The former Chief of USSR Civil Defense, Marshal of the Soviet Union V. I. Chuikov, stated that:

It is impossible to conduct war without the continuing supply of the armed forces with everything they need.... As noted, the supplying of the armed forces and of the population with everything necessary, the equipping of the civil defense forces with technical supplies for the successful execution of rescue and repair work in the zones of devastation are only possible under conditions of sustained operation of the installations of the national economy in wartime.²

The measures instituted by Soviet civil defense to guarantee wartime production is the subject of this chapter.

The starting point for ensuring the continued operation of the Soviet economy during wartime is the protection of the work force. The workers are not only necessary for maintaining production, but also make up the bulk of the non-militarized civil defense units. As noted in the last chapter, the work force is protected by means of its dispersal from the target areas, by individual means of protection, and by the provision of shelters to those workers who are to remain on the job. Measures that are taken to protect the national economic installations also provide additional protection for the workers. These measures include industrial dispersal; urban planning; industrial organization; industrial hardening; the maintenance of stockpiles and war reserves; and the protection of agricultural resources.³

Industrial dispersal refers to limiting the concentration of industry in certain regions. While it is both difficult and costly to disperse existing industry, the possibility of siting new industry near sources of energy and raw materials has the advantage of reducing the vulnerability of these industries to nuclear attack as well as aiding the development of underdeveloped areas in the Soviet Union.⁴ The industrial dispersal program has been underway for more than 15 years⁵ and apparently with some success. According to a member of the USSR State Planning Committee, during the Eighth Five-Year Plan, 1966-1970, almost

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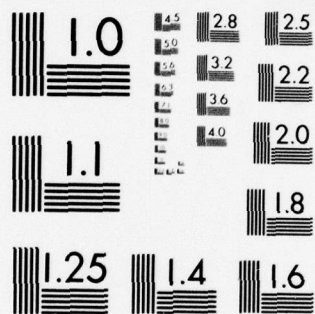
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60 percent of some 1,300 new industrial facilities were located in towns and settlements with populations of 100,000 or less.⁶

The Ninth Five-Year Plan has continued the emphasis on locating new industry in the underdeveloped areas, with particular attention on Siberia which possesses large scale resources. Industrial growth in the European part of the Soviet Union and in the Urals will be carried out mainly by means of renovating and modernizing existing facilities.⁷

Between January 1971 and January 1974, 180 new urban centers were built, including 56 new towns and 124 new urban-type settlements.⁸ These figures indicate the Soviet efforts and successes in locating new industry away from the existing industrial areas.

The Soviets have expanded their industrial dispersal programs to include the Soviet bloc countries. The alliance of Eastern Europe and the Soviet Union in the Warsaw Pact and the Council on Mutual Economic Assistance, allows Moscow to view its allies as part of a single, integrated economic system and to plan on substituting Eastern European production capacities for destroyed Soviet installations.⁹

Industrial dispersal is a time consuming process largely applicable only to new industries and therefore, its effectiveness may be limited for some time to come. Nevertheless, the program has potential and, if implemented without exception, could prove valuable both from an economic and a defense standpoint.

Industrial organization is a program by which the Soviets are attempting to locate interdependent industries in the same region. This process would eliminate work stoppages caused by a subcontractor, located in a destroyed area, being knocked out of production. These economic regions are planned to be as self-contained as possible and should be

capable of sustaining their operations independently of other regions. This arrangement may not be the most cost effective and it is difficult to provide for regional self-sufficiency in energy sources. How far this type of industrial organization has progressed cannot be estimated and, like industrial dispersal, it is a slow moving, incremental type program.¹⁰

The Soviets have included civil defense considerations in their urban planning as another method of reducing casualties and improving the survivability of Soviet industry. By applying these considerations to general plans for urban construction, the reconstruction of residential and industrial districts, and projects for building plants and factories, important gains in protecting the national economy can be made. These civil defense considerations include: 1) reducing the building density of the cities and creating satellite cities; 2) constructing wide major thoroughfares; 3) creating greenbelts and park strips; 4) constructing reservoirs; 5) developing suburban/outer areas; and 6) building a network of highways and railroads around the cities.¹¹

Because the radius of damage of a nuclear blast is generally circular in pattern, the vulnerability of a city to nuclear weapons can be reduced by altering the shape of the city. This can be accomplished during periods of urban renewal, by constructing new areas of the city farther from the city center, and by constructing satellite cities. Where these measures are considered impractical, steps are taken to limit the growth of the existing city and restrict the building of new industrial plants.¹² The restriction on new people moving into the large cities is carried out by means of police control over residence permits. In order to move to a new city, a person must first obtain a residence permit from the police and municipal authorities. These permits are not issued unless

the individual has a job and a place to live. Consequently, by restricting new industry and limiting the number of jobs, the Soviet authorities can limit the growth of the large cities.¹³

During the development of new cities and the renewal of older ones, Soviet plans call for the construction of wide major thoroughfares. These wide thoroughfares prevent the major arteries from being blocked by collapsed buildings following an attack and allow access into the area during post-strike rescue and repair operations by civil defense units. Wide streets also serve to prevent the spread of fires by acting as fire breaks. Soviet planners determine the width of the thoroughfares by using the sum of one half the height of the buildings on both sides plus fifteen meters. The resulting streets can be up to 100 meters wide. The major thoroughfares are required to be oriented in such a way as to provide a direct route to the outer zones and allow all of the city districts to be connected to the various means of transportation leading from the city.¹⁴

In addition to wide streets, the planting of greenbelts to increase the aesthetic value of the city and to act as fire breaks, are encouraged. These greenbelts are used to divide the city into districts to isolate fire damage. Parks, plazas, gardens, and groves are used in conjunction with the greenbelts to further limit the spread of fires.¹⁵

Another fire fighting measure that the Soviet civil defense planners must consider is the construction of water reservoirs. While most cities have a municipal water distribution system, it would probably be inoperative following a nuclear attack. Artificial reservoirs would be built to augment natural ones with the water being used primarily for fighting fires but also in decontaminating the area and the people. During peacetime, these reservoirs can provide the population with a number of recreation

areas.¹⁶

The development of the suburban areas or outer zones aid in reducing the city's vulnerability to mass destruction weapons. Here, medical and sports facilities are located as well as areas for the dispersed workers of the plant and essential services and the evacuated population. The construction of youth camps, boarding houses, and tourist areas supports the development of facilities for the evacuated personnel. Access roads, utilities, and the like can significantly increase the level of living conditions for the evacuees. The development of the outer zones is beneficial to both the rural resident (during peacetime) and the urban resident (during evacuation operations) and serves as a motivating factor to prepare the area in advance.¹⁷

Soviet civil defense manuals stress the importance of expanding the road network around the cities in order to help expedite evacuation and facilitate access to the cities by civil defense forces. They further urge the construction of road and railroad bypasses around the cities and the duplication of bridges to permit road and railroad traffic to continue in the event the city is destroyed.¹⁸

Much like the industrial dispersal and organization programs, the urban planning considerations with regard to civil defense are expensive and time consuming. Existing cities will only be affected as urban renewal programs are completed. Soviet publications give little information as to how widely these measures have been implemented.

There are a variety of measures that can be taken to strengthen economic installations against the effects of nuclear weapons. Soviet civil defense officials evaluate each facility relative to its vulnerability to the effects of modern weapons: blast, thermal radiation,

nuclear radiation, secondary effects, and chemical and biological contamination. Based upon this evaluation, civil defense measures are tailored to fit each particular installation.¹⁹

To determine which facilities should receive priority in implementing civil defense measures, Soviet planners use the concept of probable zones of destruction. By putting themselves in the place of a potential adversary, the planners can estimate the yield weapon required to destroy the economic facility in question. From this yield, they are able to determine a radius of heavy damage, a radius of moderate damage, and a radius of light damage. The Soviet planners assume that the aiming point will be the center of mass of the city in which the industrial plant is located. With this knowledge, the civil defense planners can implement the measures to be taken at each installation as a function of the anticipated amount of damage, i.e., by which radius of damage the facility is located.²⁰

Among the measures that can be taken to reduce an installation's vulnerability to the direct and secondary effects of a nuclear and chemical attack are the replacement of glass and highly flammable roofs; the replacement, where possible, of easily collapsed buildings; the elimination of wooden structures; the burying of electric power lines, water, gas, steam, and chemical pipes and conduits; the strengthening around or otherwise shielding unique and vital equipment; the construction of underground water reservoirs, pumping and electric transformer stations; shielding oil and chemical storage tanks; duplicating power sources and the acquisition of standby power generating equipment; the removal of highly flammable stored materials to a greater distance from the installation; and increasing the stocks of spare parts, raw materials, and semi-finished goods and

fuel reserves.²¹

These measures are to be routinely applied to new facilities and to the renovation of older installations. Because of the cost of applying these measures to existing facilities, these measures will only be implemented at existing plants 1) when the important individual components of the installation are much weaker than the other components of the installation, or 2) when hardening increases the protection of components that could continue production by themselves and turn out products for immediate use. Increasing the survivability of weak individual elements results in the equal survivability of all parts of the facility.²²

The preservation of administrative control at the production facilities during wartime is a matter that has been anticipated. Plans call for the formation of two command groups: one located in the outer zone and the other located at the plant. This permits either the director or his deputy to be with each shift. Two command posts are established to support the command groups. The command post at the facility may be located in a basement or in a detached, underground structure built for this purpose. To be effective, the command post must have uninterrupted communications and a variety of resources are installed to meet this requirement. Protected, remote control consoles are set up to control production. The command post becomes the heart of the facility during wartime. The alternate command post in the outer zone provides leadership to the formations of the off-duty shift and maintains readiness to conduct rescue and repair operations at the installation as necessary.²³

To protect the food supply of the armed forces and the workers is an important goal of civil defense measures. The Soviets believe that the rural areas will receive only minimal blast effect and need only be

prepared to protect against radioactive fallout. The measures required to protect the crops and livestock can generally be accomplished shortly after the announcement of a "threatening situation." For example, during a civil defense exercise, it took 11 men only two and one-half hours to seal a cattleshed and 20 men only three hours and twenty minutes to seal a 3,400 ton capacity grain warehouse.²⁴

Measures that are to be carried out in the rural areas include the sheltering of livestock in airtight barns or shelters; the provision of gas masks for especially valuable livestock specimens; the evacuation of livestock from threatened to safe areas; the storing of fodder, vegetables, and grain in sealed protective structures; the covering of wells and other water sources to protect against contamination; maintenance of personnel and facilities for detecting and identifying chemical and biological agents; and so on.²⁵ These measures are practiced during the conduct of complex installation exercises at the farms.

An additional consideration for maintaining wartime production involves the supply of equipment and materials needed by the plant to produce its goods. Almost every plant has to have a reserve of materials, raw materials, instruments and implements.

Reserve supplies of manufactured goods, materials, raw materials, and equipment are determined in advance by the appropriate ministry for each plant, based on the required plant working days if the supply is cut off. For this purpose, it is necessary to set up assured reserve supplies of manufactured goods, materials, raw materials, equipment, instruments, and fuels.... This assured reserve supply of all materials is calculated on the basis of the days of plant operation after which it will be possible to restore a normal supply.²⁶

In addition to the reserves at each installation, Soviet sources indicate that the Soviet Union maintains strategic reserves of combat equipment, arms, food, fuel, industrial equipment, medical supplies,

civil defense equipment, oil, and natural gas.²⁷ Some experts have speculated that the Soviets maintain a one year supply of grain and our intelligence agencies have reported locating about 40 underground grain silos whose reserves are believed to be replenished periodically to prevent spoilage.²⁸

While the majority of the measures described in this chapter are relatively expensive and long-term, there are measures that can be taken at the various economic facilities that can strengthen the ability of the Soviet economy to maintain wartime production. The movement of essential equipment to basement locations can be accomplished undetected, as can the strengthening of existing installations to protect against blast effects. These measures used in conjunction with population training and population protective measures, can significantly increase the ability of the Soviet Union to maintain production during wartime and to recover from the effects of a nuclear war more rapidly than her adversaries.

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CHAPTER V

EFFECTIVENESS AND IMPLICATIONS
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In the preceding chapters, various aspects of the Soviet civil defense program have been discussed. The real impact of the program, however, lies in how effectively it can accomplish the tasks it has been assigned. This chapter will examine the effectiveness of the Soviet program from two perspectives: one internal and the other external.

Internally, an examination will be made of what the Soviets themselves are saying about their program. Does the program function in the manner in which it was designed? What are some of the deficiencies and shortcomings that have been identified and what is being done to correct them? How does the population feel about the program? Do they have faith in it and believe that it can save their lives and their country?

From an external perspective, a look will be taken at how effectively the Soviet civil defense program accomplishes its tasks in the eyes of the outside observer. Can the program provide adequate protection for the bulk of the population? Can the Soviet Union maintain a functioning and productive economy during the course of a nuclear war by virtue of its civil defense capabilities? Can civil defense measures protect sufficient population and economic resources to allow for a rapid recovery from the effects of a nuclear war? And finally, the most important questions

for international peace: How does a viable Soviet civil defense program affect the strategic balance? Is it, or can it be, a destabilizing force on nuclear deterrence? And, should civil defense be a matter of concern for the Strategic Arms Limitation Talks?

The preceding chapters have described an extensive, all encompassing civil defense program. On the surface it appears formidable--but just how formidable is it? There are numerous articles in the Soviet press praising installations and individuals that have done well in civil defense matters and chastising others that have failed to meet the required objectives. Are these reports indicative of significant problems in the Soviet civil defense program?

Based on the frequency and readiness of the Soviet press to identify shortcomings and deficiencies concerning their civil defense program, one can assume that those areas that are frequently mentioned are priority items while those infrequently mentioned are meeting the standards of the leadership. The formal organizational structure of the Soviet civil defense is of the latter type. Few articles in the Soviet press deal with comments concerning the organizational structure. Only one complaint appears from time to time and it represents a matter on which the Soviet leadership will not compromise. That complaint stems from the fact that facility managers are also the facility civil defense chiefs. A conflict arises because of demands to meet both the production plans and the civil defense goals. This conflict is caused by the fact that both objectives make demands on the facility's limited resources--workers, materials, time, and so on.

A change in organizational structure might let the facility manager neglect civil defense but the challenge to the current unity of

command at each facility and the obvious lowering of priorities for civil defense would be unacceptable. Civil defense authorities are clear in stating that no mutual exclusivity exists, or is permissible, between production and civil defense activities. Nevertheless, press reports do indicate a number of instances where one goal or the other could not be met.¹ In fact, civil defense leaders have criticized the "laggard" facility directors for trying to erase their inadequate attention to civil defense by high production standards and statistics² and for using civil defense activities as a means of increasing worker productivity.³ The experience of the national economic facilities shows that the greatest success is achieved where the production tasks are correctly coordinated with the civil defense measures. The following pattern is observable: at installations where the production plan is successfully fulfilled, as a rule, civil defense affairs are going well. Where production is faltering, they also lag behind in civil defense matters. Production managers can in no way justify their laxity by the fact that they must take people away from work for the exercises and training.⁴ Thus, while the problem of production tasks versus civil defense activities exists, it does not appear to be insurmountable.

Another area in which civil defense can be improved is in its support from other organizations. DOSAAF organizations have been charged with failing to actively support civil defense at their meetings, with failing to aid in the conduct of complex civil defense exercises, and with failing to sufficiently support the construction of training aids and training sites.⁵ Cultural organizations are often upbraided for not taking an active part in civil defense measures and many movie theaters fail to show the short-footage educational films on civil defense.⁶ Libraries

have failed to maintain appropriate civil defense literature on hand and the local press, radio, and television agencies are not doing all they can to aid civil defense.⁷

Few complaints appear concerning the population protective measures. Gas masks are generally available for the entire population and expedient protective clothing measures are adequate. Complaints about equipment shortages appeared in the Soviet press until the early 1970's, but this problem appears to have been alleviated as these complaints have ceased. Current problems associated with equipment tend to revolve around inadequate training in its use by formation personnel.⁸

While an actual count of shelter spaces has not been published, the Soviet plan for the construction of hasty shelters meets the short-term needs while construction of more shelters in the urban areas will aid population protection in the long-term. Complaints concerning shelters seem to center on the failure of civil defense personnel in certain areas to adequately care for the existing shelters and equipment.⁹

The measures for the protection of the national economic installations cannot be evaluated adequately due to the infrequent references to these measures in the Soviet press. Whether this silence means that the civil defense steps are adequate cannot be determined.

The final area in examining the effectiveness of Soviet civil defense as the Soviets see it, is the mandatory training program. A problem for civil defense authorities is how to describe the effects of nuclear weapons as being frightening enough to encourage the population to take civil defense training seriously, while at the same time, not to make nuclear weapons appear so frightening as to make the situation seem hopeless.¹⁰ The population has reacted with apathy to the various civil

defense courses that have been instituted since World War II.¹¹ This attitude is reflected in the following oft cited Russian joke: "What do you do when you hear the alert? Put on a sheet and crawl to the cemetery--slowly. Why slowly? So you don't spread panic."¹² The cynical contraction of the first two letters of each of the Russian words for civil defense, grazhdanskaya oborona, yields the Russian word grob or coffin and is cited as another indicator of the population's lack of enthusiasm and faith in the civil defense program.¹³

The introduction of practical training that requires the application of civil defense knowledge is one way in which the civil defense leadership has overcome this lack of enthusiasm.¹⁴ If an individual fails to meet the established standards of performance, he is required to repeat the civil defense course, and this possibility provides an incentive for him to pay attention and meet the standards on his first attempt. The Soviet press has reported that in some areas the civil defense instructors have moved extremely slowly in instituting practical training--preferring the old method of formal lectures and the showing of films, which the students could and often did, sleep through.¹⁵ The fact that the bulk of the civil defense training takes place during an individual's non-working hours is resented by the population as just one more demand on their limited time and tends to make them accomplish the minimum necessary to satisfy their superiors. Reports indicate that civil defense training in the rural areas and among the non-working population lags behind that of other personnel.¹⁶

Civil defense formations are often criticized as not being adequately trained in their specialties. Many times the formation members do not train as a unit but rather as individuals and as part of a work

shift.¹⁷ The best means of training these personnel, complex exercises, are not scheduled throughout the entire training year and are often of too simple a nature.¹⁸ Furthermore, installations fail to conduct enough night and winter exercises to prepare the personnel for operations under these type conditions.¹⁹

Enterprises are required to provide classroom space, a place for the civil defense corner, and resources to support civil defense training. This includes building relatively sophisticated training sites where post-strike rescue and repair operations, as well as other civil defense measures can be practiced. The resources for these sites come from the enterprise budget and compete directly with the production quota. Civil defense leaders complain that the building of these training sites is moving ahead too slowly.

Project managers, as civil defense chiefs, are required to prepare plans for various contingencies and to train their subordinates. Some facility directors have managed to evade attending training courses and have even encouraged or assigned subordinate personnel to attend in their place.²⁰ As a consequence, many of the civil defense chiefs do not possess sufficient knowledge to train their subordinates adequately or to conduct complex exercises to obtain the maximum training value.²¹

In rural areas, there appears to be a shortage of qualified instructors, and insufficient emphasis has been placed on the organization of protection for livestock, plants, foodstuffs, and unprocessed food against radioactive and toxic substances and biological agents.²²

Some fields of employment are just not conducive to effective civil defense training, such as taxi drivers, fishermen, store employees, and the like. Consequently, the level of civil defense training among

these segments of the population is lacking.²³

A final shortcoming, and perhaps the most serious, is that an actual evacuation of an urban area or even an urban district, has never been staged. Factory evacuations frequently include only the off-duty shift and neglect including their families and the non-working population of the area. While it appears that detailed plans for large-scale evacuations exist, reports have surfaced that urban residents do not know the location of their evacuation assembly points.²⁴

It would be easy to conclude from the shortcomings and deficiencies just discussed that the Soviet civil defense program is little more than a waste of time and resources. In fact, however, the publication of the names of facilities and individuals who have failed to meet the standards, as well as the identification of common problems, serves as a stimulus for increased concern and improvement. The discussion of shortcomings in the Soviet press represents a healthy self-criticism that can only lead to a further strengthening of the program's effectiveness. This is precisely the attitude indicated by Soviet President Brezhnev when he stated: "We are proceeding correctly, proceeding in the Leninist manner, if while giving due credit for what has been achieved, we concentrate attention on our still existing shortcomings and on unresolved tasks."²⁵

In order to assess the implications of the Soviet civil defense program, one must decide how he views civil defense in general. Some people, to include physicist Sidney Drell and the American strategic thinker Fred Charles Iklé, believe that the overall effectiveness of any civil defense program would be negligible in a nuclear war. Mr. Drell bases his conclusions on what he believes to be the overall uselessness of protection from cumulative radiation.²⁶ Mr. Iklé believes that the

cumulative effect of a nuclear war is so little known that no one can really predict under what circumstances a nation could survive.²⁷ In this regard, this author believes that Americans play into the hands of the Soviets by constantly stating that nuclear war is "unwinnable" and that there will be no survivors. Former Secretary of State Henry Kissinger helped to perpetuate this "no survivors" idea when in response to a question as to why the Soviets agreed to the Vladivostok pact concerning SALT II, he stated: "I would suppose the General Secretary has come to the same conclusion that we have: that whatever level you put at the ceiling, it is enough to destroy humanity several times over, so that the actual level of the ceiling is not as decisive as the fact that a ceiling has been put on it."²⁸ More recently, the Secretary of the Navy, W. Graham Claytor, stated: "No one's going to win a nuclear war. No one. Everyone's going to lose."²⁹

The corollary of the no survivors idea is that of overkill, which means that each side has the capability to destroy the opponent "many times over." Both of these concepts are misleading and tend to lull westerners into a false sense of security. Overkill can only exist if all of the opponent's population is located in the target cities, a highly unlikely prospect. Credible, scientific evidence exists to support the belief that a nuclear war can be survived and that the effects of nuclear weapons can be offset by a functioning civil defense system. Physicists Eugene P. Wigner and Arthur A. Broyles have concluded that a two week stay in fall-out shelters can permit the population to avoid the cumulative effects of radioactivity.³⁰

Others claim that a nuclear war of five thousand megatons yield from fissionable material would result in a radiation dose over ten years

of about two rads to the bone marrow and one rad to the whole body of those persons located outside the primary fallout areas. This would produce approximately 200 cancers per million people. While regrettable, this represents only slightly more than one percent of the present death rate from cigarette induced lung cancer and is definitely not significant from the viewpoint of national survival.³¹

The question of the effectiveness of civil defense inspires a debate that will likely continue for some time to come. The question, for our purposes, is: Can a nation afford not to think about what life would be like after a nuclear war? In this author's opinion, it cannot.

Once one decides how he lines up on civil defense in general, he must evaluate the effectiveness of the Soviet program. Some news reports, like the May 23, 1977, NEWSWEEK item,³² seem to conclude that the Soviet program is ineffective because the population is generally unconcerned and apathetic towards it, plus the fact that signs of an active civil defense program (fallout shelter signs, installation of air filtration systems in Moscow's subways, etc.) are missing. According to a report of the Congressional Joint Committee on Defense Production, the Soviet Union's civil defense efforts have not kept pace with advances in U.S. strategic weapons and can be overcome by the retargeting of these weapons.³³

Other observers are not so optimistic concerning the ineffectiveness of Soviet civil defense. They cite evidence of a continuing emphasis on protecting industry and the population by Soviet authorities. Such evidence includes the existence of a gigantic 7 to 8 million square foot factory hidden under a mountain "west of the Urals and east of Moscow" of which stacks, blast doors, and service roads are the only visible elements; population shelters near apartment complexes in Moscow, Leningrad, and

Kiev that look like dirt mounds but have ventilation panels on top and stairwells on the side;³⁴ and the identification of 75 huge steel spheres sunk 600 feet into the ground and covered with earth and reinforced concrete located near Moscow and believed to be reserved for the Politburo, military general staff, and high level Soviet bureaucrats.³⁵

A study performed by Boeing Aerospace Company to evaluate the effectiveness of Soviet industrial protective measures, showed that more than 50 percent of the industrial equipment in primary target areas would survive. The supporting industry around the large target plants would do even better. Buildings would suffer but much of the equipment inside would remain in working order.³⁶ Based on these results, Thomas K. Jones, Boeing's Program and Production Evaluation Manager, estimates that Soviet industry would recover from a nuclear war in 2 to 4 years, compared with an estimated 12 year recovery period for the United States.³⁷

Mr. Jones also estimates that Soviet losses in a full-scale war with the United States, if the USSR evacuates and shelters its population according to plans, would be about 4% of the population.³⁸ He is supported in this conclusion by Dr. Eugene P. Wigner, who states that the total explosive power of Soviet missiles is now more than six times greater than that of the United States. He calculates that, if the Soviets evacuate their cities, the maximum casualties the U.S. could inflict would be less than 4% of the population. The Soviets could destroy or threaten to destroy 45% of the U.S. population.³⁹

The motivations and intent of the Soviets in developing such a complex civil defense program is difficult to discern. One possibility might be the following: The number of states belonging to the "nuclear club" is growing as the years pass, and with this development, the

possibility of nuclear war increases. The Soviet civil defense system can protect the population from the effects of a nuclear war in which the Soviet Union is not a participant. Furthermore, the civil defense system, in conjunction with the Soviet ABM deployment, can guard against an accidental launch or an outright attack on the Soviet Union by a less sophisticated nuclear power such as the People's Republic of China. This author believes that protection against nuclear strikes by states other than the United States is purely a bonus effect. The Soviet civil defense program is directed against the United States deterrence theory of mutual assured destruction. The Soviet leadership does not subscribe to this theory and believes that nuclear war is not only survivable but winnable. American policy makers applauded the SALT I agreements because they felt Soviet acceptance of the treaty meant that the Soviets were willing to allow their population to be held hostage as a means of deterring nuclear war. Quite the contrary. What the Soviets achieved by the SALT I agreements, was to shift the focus of the strategic balance from an area where the United States has a technological advantage--anti-ballistic missiles--to an area--civil defense--where they have an advantage. Soviet President Brezhnev, in a 2 May 1978 interview, made clear that the purpose of the Soviet civil defense program is to negate, on the Soviet side, the concept of mutual assured destruction.⁴⁰ In fact, rather than mutual assured destruction, the Soviets have embraced the philosophy of unilateral assured survival.

There is little difference, from this author's point of view, between the destabilizing effects of an ABM system and the destabilizing effects of the Soviet civil defense program. If the Soviets believe that they can protect their industry and their population, then they will be

able to deal with the United States from a position of nuclear strength and make inroads around the globe without regard for the western position.

Clearly, the United States must negate the effects of the Soviet civil defense program if nuclear deterrence is to continue to be the guarantor of world peace. This can be accomplished by developing a civil defense program for the United States, by increasing the size of the U.S. offensive capability to deal with the hardened industries and the evacuated population, or, preferably, through including civil defense as a consideration in the strategic balance computations of any future Strategic Arms Limitation Talks. Whatever choice the United States makes, the conclusion that a viable civil defense program, like that of the Soviet Union, has strategic consequences can be disregarded only with the gravest risks.

NOTES

1. Krasnaya Zvezda, 28 March 1976, JPRS, Translations on USSR Military Affairs, No. 1229, 20 April 1976, pp. 42-44.
2. A. D. Sutankin, "Everyone's Sacred Duty," Sovetskaya Estoniya, 8 September 1977, JPRS, Translations on USSR Military Affairs, No. 1317, 1 December 1977, p. 6.
3. Altunin, "Resting on Laurels," p. 4.
4. I. Dobrorodniy, "On the Level of the Advanced," Voyennyye Znaniya, December 1976, JPRS, Translations on USSR Military Affairs, No. L/6845, 2 February 1977, p. 79.
5. Garanov, "Active Help for Civil Defense," p. 16.
6. K. Kulmatov, "Civil Defense is a Party Matter," p. 2.
7. Kazakhstanskaya Pravda, 20 November 1971, JPRS, Translations on USSR Military Affairs, No. 770, 10 January 1972, pp. 42-46.
8. Gouré, War Survival, p. 214.
9. N. Kalinina and P. Gorbunov, "Take Care of Protective Facilities," Voyennyye Znaniya, August 1976, JPRS, Translations on USSR Military Affairs, No. L/6520, 13 October 1976, pp. 33-34.
10. Sutankin, "Everyone's Sacred Duty," p. 3.
11. Goldhamer, The Soviet Soldier, pp. 74-75.
12. Fred M. Kaplan, "The Soviet Civil Defense Myth," Bulletin of the Atomic Scientists, March 1978, p. 16.
13. Ibid.
14. Kremenskiy, "New Civil Defense Program Emphasizes Practical Training," pp. 24-29.
15. Grekov, "Requirement of the Times," p. 5.
16. Muradyan, "Raise the Readiness of Civil Defense," pp. 56-58.
17. Kremenskiy, "New Civil Defense Program Emphasizes Practical Training," p. 25.

18. Ibid.
19. Goldhamer, The Soviet Soldier, p. 83.
20. Kremenskiy, "New Civil Defense Program Emphasizes Practical Training," p. 25.
21. Muradyan, "Raise the Readiness of Civil Defense," p. 58.
22. Davydov, "The Main Principle of Training," p. 34.
23. Gouré, War Survival, p. 213.
24. Ibid.
25. V. Nazarov, "The Situation is Different Now," Voyennyye Znaniya, August 1976, JPRS, Translations on USSR Military Affairs, No. L/6520, 13 October 1976, p. 28.
26. Sidney D. Drell, "Civil Defense in Limited War--A Debate," Physics Today, April 1976, pp. 45, 52-55.
27. Fred Charles Iklé, "The Nether World of Nuclear Megatonnage," Bulletin of the Atomic Scientists, January 1975, pp. 20-25.
28. Carsten M. Haaland and Eugene P. Wigner, "Surviving a Nuclear War," National Review, September 17, 1976, p. 1005; (emphasis mine).
29. The Sunday Peninsula Herald, June 18, 1978, p. 2A.
30. Arthur A. Broyles and Eugene P. Wigner, "Civil Defense in Limited War--A Debate," Physics Today, April 1976, pp. 45-47, 50, 52, 55-56.
31. Conrad V. Chester and Eugene P. Wigner, "Population Vulnerability: The Neglected Issue in Arms Limitation and the Strategic Balance," Orbis, XVIII (Fall, 1974), 765.
32. "Russia's Bomb Shelters," Newsweek, May 23, 1977, p. 33.
33. Eugene Kozcharow, "Congress Unit Hits Significance of Soviet Civil Defense," Aviation Week and Space Technology, May 30, 1977, pp. 50-51.
34. Shapley, "Soviet Civil Defense: Insiders Argue Whether Strategic Balance is Shaken," p. 1141.
35. John G. Hubbell, "Soviet Civil Defense: The Grim Realities," Reader's Digest, February 1978, pp. 77-80.
36. O. C. Boileau, "Soviet Civil Defense--Prelude to Nuclear War?" National Defense, May-June 1977, pp. 478-481.
37. Shapley, "Soviet Civil Defense: Insiders Argue Whether Strategic Balance is Shaken," p. 1141.

38. Eugene Kozicharov, "Nuclear Attack Survival Aspects Studied," Aviation Week and Space Technology, November 14, 1977, pp. 52-53.

39. Frisbee, "The Imbalance in Civil Defense," pp. 53-54.

40. Soviet World Outlook, May 15, 1978; cited by Army Times, June 5, 1978, p. 16.

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